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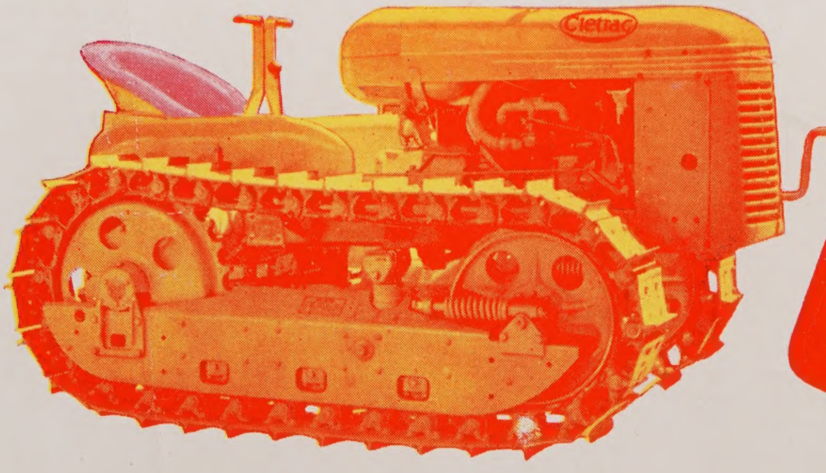

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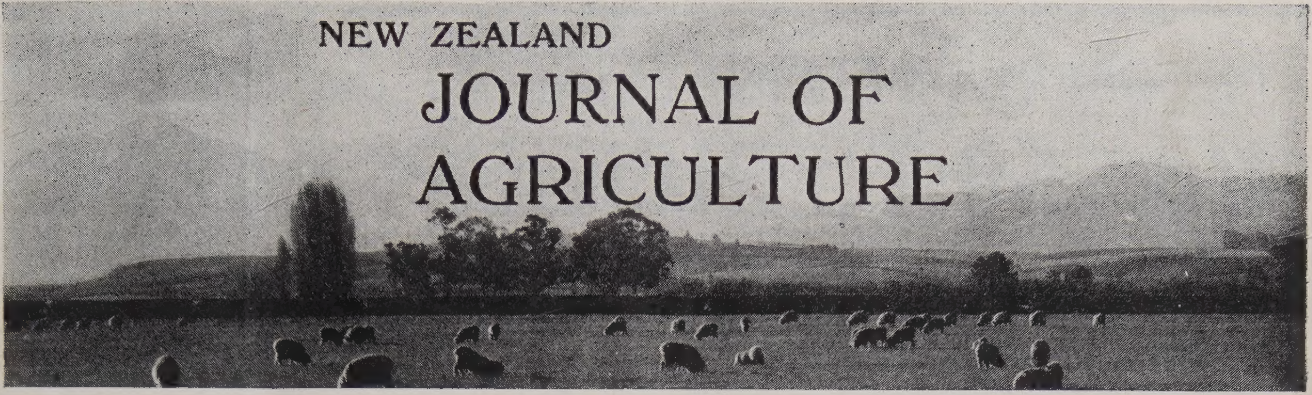


NEW ZEALAND
JOURNAL OF
AGRICULTURE

Vol. 70, No. 3. Published by Direction of Hon. B. Roberts, Minister of Agriculture. March 15, 1945.

Serpentine Superphosphate

STATEMENT BY NATIONAL COUNCIL OF PRIMARY PRODUCTION

THE factors leading up to the National Council of Primary Production supporting the large-scale manufacture of serpentine superphosphate, and an outline of the policy for the use of serpentine superphosphate in the immediate future, are contained in the following statement by the council.

FROM the time it was formed—September, 1939—the National Council of Primary Production was kept in the closest touch with the fertiliser position in New Zealand.

The possibility of a serpentine-superphosphate combination was brought before the council at its first meeting, because of promising results from trials being conducted by the Department of Agriculture. In April, 1940, the official crop experimentalist reported as follows:—

> "Serpentine superphosphate offers distinct possibilities as a fertiliser in New Zealand. It is a reverted phosphate—its value is therefore indicated in such soils which lock up water-soluble phosphate and with those crops which are liable to germination injury. A considerable saving in phosphate is possible. In the present emergency this may be a vital factor."

Such a statement merited the attention of the National Council charged with the duty of advising the Government on the most effective use of fertilisers in wartime. Then in December, 1940, the Germans shelled Nauru Island—the main source of our phosphate supplies for superphosphate manufacture—and sank several phosphate-carrying vessels lying off the island. A year later the Japanese occupied Nauru Island, thus completely cutting off phosphate supplies from both Nauru and Ocean Islands, and the enemy is still in occupation.

The alternative sources of phosphate supply to Nauru and Ocean Islands have provided, up to this present season, less than half the tonnage received for superphosphate manufacture in 1940, and the phosphate has not been of so high a grade. Today the total phosphate available is only about half that of 1940.

As well as the loss of tonnages from Nauru and Ocean Islands, an annual tonnage—approximately 100,000 tons—of other phosphates imported, such as basic slag and North African phosphates, was denied us shortly after the outbreak of war. This drastic curtailment of phosphate supplies for New Zealand brought about fertiliser rationing some four years ago, which is still in force. The National Council considered that not only was it necessary to distribute the lesser quantity of phosphate available equitably, but that full attention should be paid to distributing this phosphate in the most effective form. So the question of serpentine superphosphate manufacture was continuously studied by the council. The results of all official trials were placed before the council from time to time, also experimental data from a similar type of fertiliser used overseas—namely, in Russia.

In May, 1940, the council unanimously resolved that the Government be asked to do all that was necessary to stimulate serpentine superphosphate mixtures. At a meeting of the council in October, 1941, a resolution was passed unanimously that in view of the imperative necessity in the national interest of getting the maximum use of our limited importation of phosphate, the council recommended that after January 1, 1942, no fertiliser with more than 5 per cent. water-soluble phosphate should be manufactured except under conditions to be approved by the council.

The council had in mind that serpentine would, as far as practicable, be the agent used to revert the water-soluble phosphate. A year later, in September, 1942, the manufacture of serpentine superphosphate was made mandatory by the Government in the North Island, and large-scale manufacture of this fertiliser was planned for the South Island. At that time the serpentine deposits in the South Island were under investigation, and it was not then practicable to convert all superphosphate made in the South Island into serpentine superphosphate.

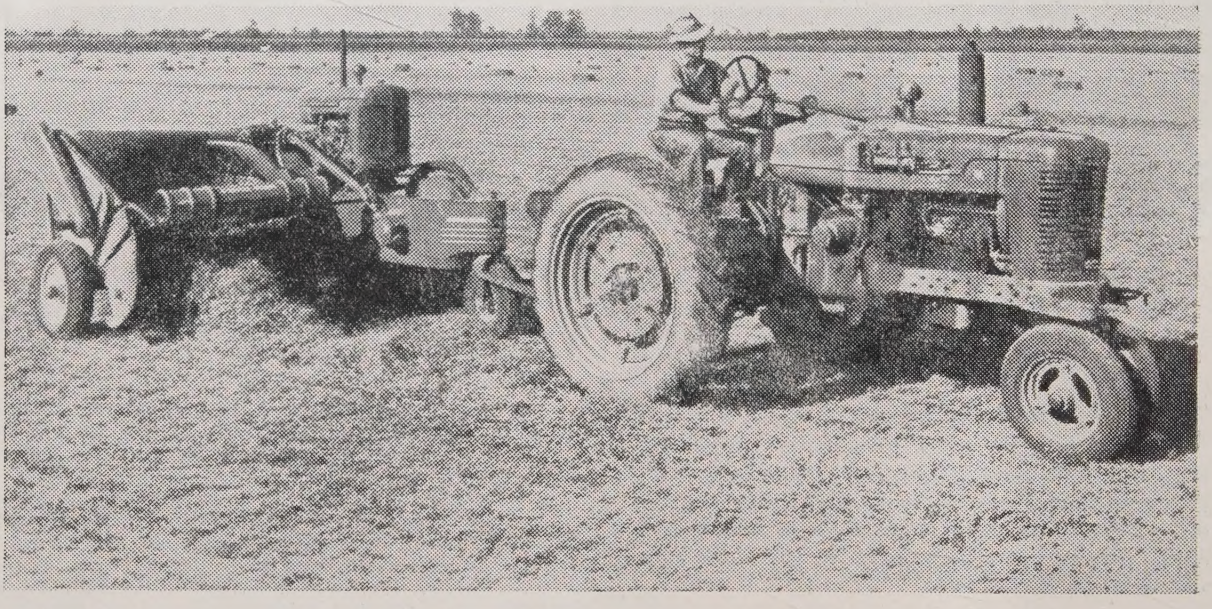
North Island Position

Up to the middle of last year nearly all the deliveries made to farmers in the North Island were, as from September, 1942, in the form of serpentine superphosphate.

McCORMICK-DEERING announce the new . . .

No. 50 T. PICK-UP BALER

arriving in limited numbers in near future!



With these new machines hay can now be harvested with less labour than ever before because International Harvester—pioneer manufacturer of labour-saving harvesting equipment—has perfected an automatic twine baler. Automatic sliced-hay baling with the No. 50-T Pickup Baler makes it possible to bale hay or straw without additional help. **LARGE CAPACITY.** Neatly formed and firm bales of sliced hay weighing from 40 to 65 pounds can be turned out at the rate of three to five bales per minute, or up to six tons per hour, depending upon the kind of hay and the condition of the field. Designed primarily for windrow pickup baling, the No. 50-T Pickup Baler is also ideal for stack baling.

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AUTOMATIC BALE SEPARATION.—Bale separation by needles does away with blocks.

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The difficulties regarding the supply of serpentine in sufficient quantities—chiefly shortage of railway trucks and inadequacy of plant in some superphosphate works—necessitated the subsequent delivery of a certain tonnage of straight superphosphate. Unfortunately it was not possible for many farmers to exercise any option in respect to superphosphate or serpentine superphosphate. The condition of much of the serpentine superphosphate delivered has not been satisfactory, but the installation of the necessary drying and grinding plant at works, now under way, should ensure a first-class product in the future. Not only will a product of better physical condition be possible, but the decision to improve the chemical nature of serpentine superphosphate will mean a higher grade serpentine superphosphate than was formerly available to farmers.

Despite the unsatisfactory nature of a certain tonnage of serpentine superphosphate supplied in the North Island, the field results from the large-scale use of this fertiliser must be viewed as satisfactory, judging by reports received of production figures. This bears out the official field trials on crops and pastures and the experience of many farmers. It is justification, too, of War Cabinet's present decision that serpentine superphosphate manufacture be fully maintained in the North Island.

Because of difficulties associated with a full supply of serpentine and its incorporation with all superphosphate made at works, there is every likelihood that a certain tonnage of straight superphosphate will be available this coming year. Arrangements are being made whereby this should be available to farmers expressing a definite preference for superphosphate up to the tonnage that will be available.

The National Council fully realises the objections of some farmers to the compulsory use of serpentine superphosphate, and it advised the Government to take this step only as the best practical means of ensuring the maximum results from our phosphate supplies and of obtaining the fullest returns from farm lands. The council believes that the field use of this new fertiliser has amply justified its attitude. It would point out also that the conditions determining the council's decision have not materially changed up to the present time. The call for the maximum returns from our farm lands still exists, and full production is likely to be needed for years to come.

We are still receiving, and likely to receive for several years, much less phosphate than was available at the outbreak of war, and the need to make every ton of this do the maximum amount of good in farm production is still of paramount importance. In fact, the drain on our fertility through lessened fertiliser use over several years has intensified the need for applying fertiliser in its most effective form. New Zealand soil scientists have advised the council that there is no better practical way at present of doing this than by converting our superphosphate into serpentine superphosphate and by the use of lime, in the regions where this is needed, in adequate quantities per acre and applied as straight lime.

Not only does serpentine superphosphate apply phosphate and other materials in an effective form for crops and pastures, but its physical properties—it is non-setting and non-bag rotting—are further distinct advantages, which mean a minimising of labour in fertiliser application and an economy in bags, which are now high in price and must be imported. Further, storage both on farms and elsewhere is possible, an important point in the light of present transport difficulties.

With limited quantities of fertiliser available per acre, the fact that farmers have been able to get one-third more tonnage in their ration as serpentine superphosphate compared with superphosphate is also quite important, and unquestionably has been a factor in the maintenance of a high level of production in this country over recent years. The National Council believes that the experience to date suggests that individual farmers have benefited by the use of serpentine superphosphate and will continue to do so.

There is also the national aspect of the use of serpentine which should be borne in mind. New Zealand is unfortunate in not having any worthwhile deposits of phosphate. All our phosphate supplies must be imported. Even when Nauru and Ocean Island supplies are again available, they are likely to be exhausted within the lifetime of the present younger generation of farmers. The necessity, therefore, of making the best use of phosphate is one of national importance. If, as seems highly probable, we can introduce into our fertiliser manufacturing programme a New Zealand material such as serpentine, which has been termed a "superphosphate equivalent" when combined with superphosphate, it must be viewed as a measure deserving the wholehearted co-operation of the farming community of this country.

In view of experience already gained, and since a higher grade serpentine superphosphate will be available, the National Council asks farmers to utilise fully all the tonnage of the fertiliser that will be made available for them in this coming fertiliser rationing year.

South Island Position

A suitable serpentine deposit for use commercially at fertiliser works was located in the South Island some time after the manufacture of serpentine superphosphate had commenced in the North Island. Also, unlike the North Island, a considerable quantity of a reverted superphosphate—from superphosphate and lime mixtures—was available to South Island farmers. While the Government, on the advice of the National Council, had asked South Island manufacturers over two years ago to proceed with large-scale manufacture of serpentine superphosphate, mainly for the foregoing reasons, the southern development has been up to the present time quite limited, though less so than circumstances warranted.

From official experiments and the experience of farmers who have used it, the evidence supports the use of serpentine superphosphate as strongly in the South Island as in the North—both on crops and grassland. The recommendation of technical officers is that for New Zealand conditions our superphosphate should be applied as serpentine superphosphate and where necessary lime should be applied straight in adequate quantities. The War Cabinet decision is that at least half the superphosphate manufactured in the South Island be converted into serpentine superphosphate in the coming year.

The National Council requests farmers to support this decision when placing their fertiliser requirements with vendors during the coming rationing period. Arrangements are being made for an adequate supply of high-quality ground serpentine to works and for the manufacture of a high-class serpentine superphosphate from both the physical and chemical standpoints. The co-operation of South Island farmers in full utilisation of serpentine superphosphate manufactured is requested by the National Council.

◆ ◆

Bushel Weights in Common Use

						No. bushels per sack.
Barley ..	**50lb.**	**reckoned**	**to**	**the**	**bushel**	**4**
Beans ..	**65lb.**	**"**	**"**	**"**	**"**	**3**
Bran or Pollard	**20lb.**	**"**	**"**	**"**	**"**	**7 to 10**
Maize ..	**56lb.**	**"**	**"**	**"**	**"**	**3½**
Oats ..	**40lb.**	**"**	**"**	**"**	**"**	**4**
Peas ..	**60lb.**	**"**	**"**	**"**	**"**	**3½**
Ryecorn	**54lb.**	**"**	**"**	**"**	**"**	**3½**
Wheat	**60lb.**	**"**	**"**	**"**	**"**	**3**
Ryegrass	**20lb.**	**"**	**"**	**"**	**"**	**6**

When any of the above grains are ground to a feed meal the bulk is thereby greatly increased and the reckoned bushel weight considerably decreased.

◆ ◆

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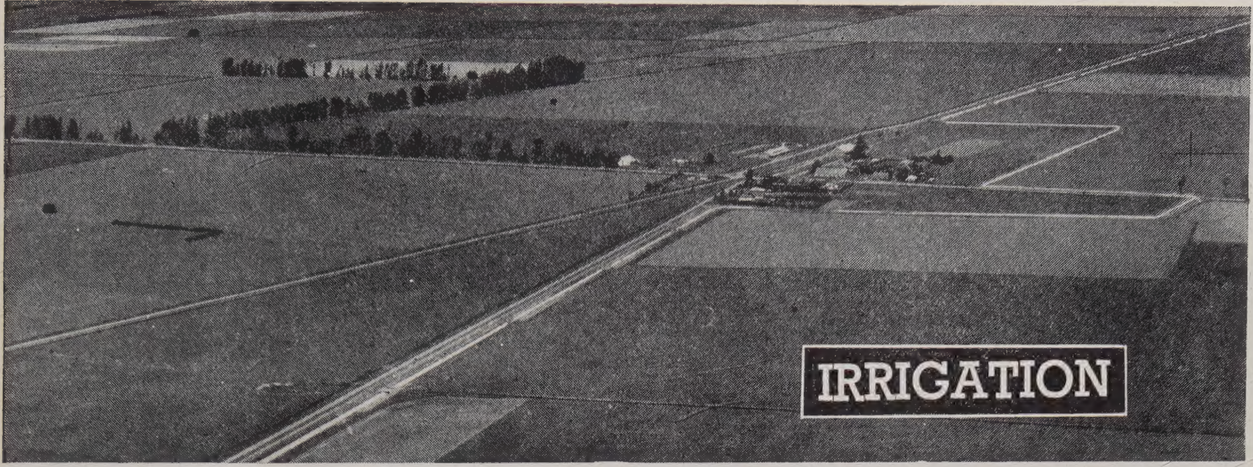

Mid-Canterbury Trial Area

THE increasing recognition of the value of irrigation to farmlands in certain parts of New Zealand has made it advisable to review the results of experimental work completed to date. An evaluation of the work carried out by the Department of Agriculture and the Public Works Department on a farm at Winchmore, Mid-Canterbury, over the past seven years is contained in the following article.

WATER will be available to irrigators from the completed general scheme in the district during the coming season, and a review of the results on the trial areas should be of great interest to farmers to whom the wider plan will bring similar possibilities.

For a practical demonstration of the relative value of irrigation it was realised that any trial area should be included in the working and economy of a whole farm. Accordingly arrangements were made with Mr. W. Hammond, of Winchmore, in 1937, to irrigate portion of his farm of 442 acres.

Typical Plains Country

The property is typical fair to medium light plains country, 60 acres of which was cropped, while 450 ewes, 3 dairy cows, and one horse were carried. The normal carrying capacity was slightly better than one sheep per acre, but this figure varied, owing to occasional periods of severe drought which reduced the carrying capacity considerably.

The area irrigated was limited by the amount of water available from a county main stock race after the requirements for stock water in the district had been provided for.

A total of 47 acres was prepared for irrigation by the construction of border dikes, the labour involved in irrigation being part of the routine work of the farm. The 47 acres were divided into Block 1, of 5 acres, Block 2, of 6 acres, and Block 3, of 36 acres.

Pastures Established

Block 1 was sown to certified perennial ryegrass and certified white clover in the autumn of 1940. The area was irrigated and topdressed to the same extent as Block 3, and was continuously grazed by three dairy cows and at intervals by sheep. No stocking records were kept, but the area is carrying a vigorous productive sward.

Block 2 was sown in lucerne in February, 1940, with 13lb. seed per acre drilled in with 1cwt. of a mixture of equal quantities of lime and superphosphate. It was topdressed the following spring with 2cwt. superphosphate and 1 bag per acre of a proprietary lucerne mixture. From then on the same manurial and water treatment was applied as for Block 3. The day after sowing a violent nor'-wester was experienced, and as a result the topsoil was lifted and a poor strike resulted. However, under irrigation growth thickened up, and the stand can be considered a reasonable one. Three to four cuts were harvested per year, according to availability of labour. The yield of 700 bales of lucerne hay per annum, or approximately 24 tons, was averaging 4 tons per acre. As all of this was not used on the farm, it has been taken in the comparison of costs below that the proceeds of the portion sold cover baling and harvesting costs.

Block 3 was sown on February 16 and 17, 1937, with the following mixture:—

30lb. certified Commercial perennial ryegrass.
2lb. crested dogstail.
2lb. Mother seed white clover.
2lb. certified Montgomery red clover.

With the mixture was sown 1¼cwt. of superphosphate per acre.

The block was lightly grazed in May and June of the same year and spelled until late September, when irrigation and intensive grazing were commenced.

Topdressing

Topdressing was carried out annually, but up to the end of the 1939-40 season this was arranged in varying amounts and combinations of lime and superphosphate in order to observe the different reactions. The figures given for this period in the table below are averages over the whole area. This arrangement having fulfilled its purpose, from 1941 onwards topdressing was carried out in the normal way, spreading the lime and fertiliser evenly over the whole area.

While there was a definite response to lime and superphosphate, the effect of the lime was not fully apparent until the third season, and no appreciable difference between 1½cwt. and

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with the
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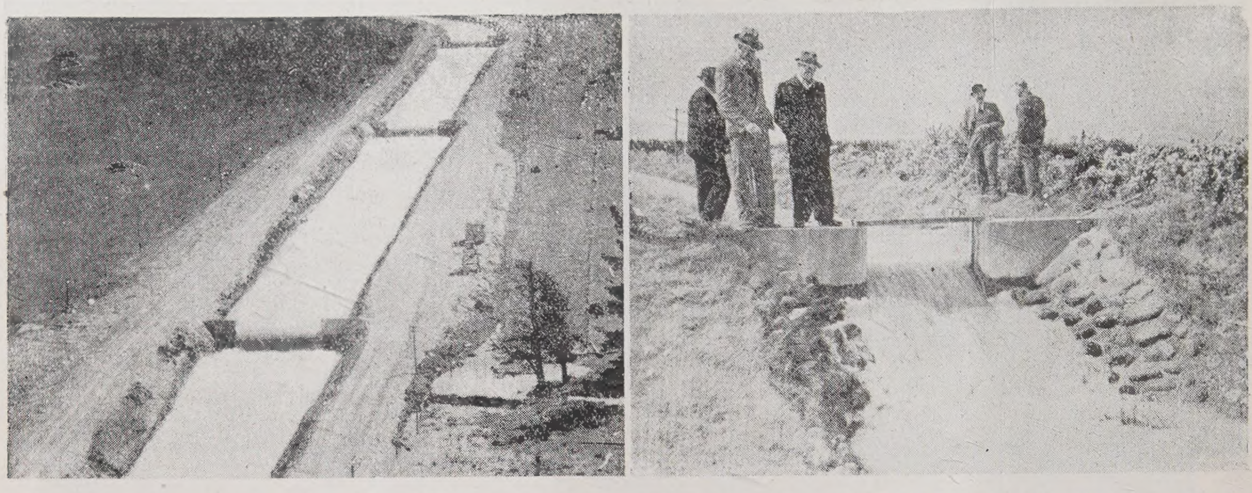
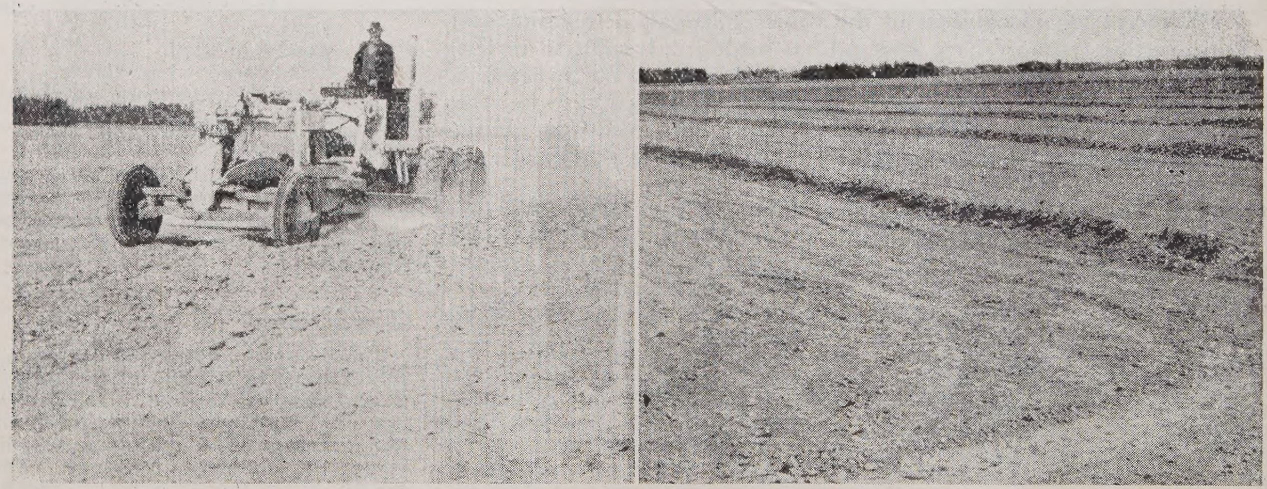


Left.—Water from the Rangitata River flows across country in the recently-completed Rangitata diversion race at the rate of 1,000 cub. ft. per second. Right.—A turn-out structure to supply water to the farm is situated immediately above this drop in the distributory race.



Preparation of a field for irrigation by levelling and border diking is done with this modern machinery at an average cost of £3 to £4 per acre. The strips on the prepared field are 40ft. wide and up to 10 chains in length.

Left.—Irrigation of the strips is done simply by diverting the water from the race into each strip in succession. Right.—This dense sward of permanent pasture is not affected by droughts or grass-grub and carries an average of 6 sheep per acre all the year round.

In the foreground is an irrigated pasture with a non-irrigated one beyond the fence.

3cwt. per acre of superphosphate was evident.

Seven Seasons' Working

The following table compiled from carefully-kept records shows the results obtained over seven seasons of working:—

CARRYING CAPACITY AND TREATMENT.

	Sheep carried per acre.			Topdressing		Rainfall	Irrign.
Season.	Irrigation Season.	Full Year.	Type.	Lime Tons.	Superphosphate Cwt.	Aug.-Mar. Inches.	Water Inches.
1937-38	11.8	8.3	Hoggets	½	1½	20	23
1938-39	13.7	9.3	,,	—	1½	20	27
1939-40	8.8	6.1	Ewes	—	1¾	16	35
1940-41	7.9	5.2	Ewes	—	1¾	23	30
1941-42*	5.3	4.1	Ewes	—	1¾	22	24
1942-43	7.1	7.0	Ewes	½	1	17	32
1943-44	9.9	7.1	Ewes	—	1	22	16

*Note.—Owing to several changes in management during the season maximum use was not made of the area.

The average year-round carrying capacity over two seasons with hoggets was 8.9 per acre; for ewes over five seasons it was 5.9 per acre, and the lambs were not taken into account.

Long-lived Sward

The irrigation block was examined by officers of the Department of Agriculture in August, 1944, and the following is an extract from their report:—

"The pasture has actually deteriorated very little, if at all, during the seven years the area has been under irrigation. . . . The sward . . . is still an excellent one, and is decidedly superior to an average second-year pasture on similar class of country which has not been irrigated. Provided management of the pasture in the matter of topdressing, irrigating, and method of grazing is continued as in the past, there is no reason to suppose that the sward would deteriorate to any appreciable extent for some considerable time."

Grass-grub

The fact that irrigated pasture in its eighth year is at least as good as at any other stage is sufficient proof that grass-grub troubles are negligible. At periods when neighbouring paddocks have been affected up to 90 per cent., the demonstration area has shown only slight traces, up to 5 per cent. The reason is interesting. On the irrigated area it has been found that the grub is quite prevalent, but that its action has not been sufficient to check the growth induced by the application of water. The savings under this heading are difficult to assess, but could be considerable.

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On the Balance Sheet

The following is a detailed estimate of costs and increased returns which irrigation has meant in the economy of this typical small farm:—

Increased Returns due to Irrigation:		
Additional ewes carried, 260; lambs sold, 260 at 26/3	341 5 0	
Wool, 2340lb. at 1/3	146 5 0	
Increase in value of balance of lambs, 450 at 2/- (est.)	45 0 0	
		532 10 0
Cost of Producing above Increase:		
Land Preparation:		
Capital Cost, 47ac. at £5, £235; Interest and Sinking Fund Annual Cost	20 3 0	
Water:		
Average of 27in. for 47 acres; 1269 acre inches at 3d.	15 17 3	
Allowance for labour—say	10 0 0	
Topdressing:		
Superphosphate, 1½cwt. per acre at 4/10 per cwt...	17 0 9	
Lime, 12 tons at 22/- a ton	13 4 0	
Spreading 47 acres at 3/-	7 1 0	
Pasture:		
1-10th of cost of establishment at 50/- per acre ..	11 15 0	
Sheep:		
Depreciation, 260 at 7/- per head	91 0 0	
Deaths, 5% at £1 a head	13 0 0	
Shearing extra sheep	6 0 0	
		205 1 0
Net Profit ..		£327 9 0

Thus for a maximum annual expenditure of £205 on 47 acres of this farm a return of £532 was obtained, leaving a net profit of £327 9s.

This land which previously carried one sheep per acre now carries six and returns nearly £7 per acre when irrigated. These figures are conservative and care has been taken to ensure that any omissions or assumptions show the comparison in the least favourable light.

Items Analysed

Cost of Land Preparation: It is admitted that the actual cost of preparing this area was in excess of the £5 per acre shown, but as it was the Public Works Department's first attempt and was carried out with out-of-date machinery, there is no point in using the actual figure. The cost quoted would cover the preparation of similar areas today. Some criticism may be expected to the showing of these costs on an annual basis, but, as the returns are annual, no other method of showing preparation costs would be accurate. Nevertheless, the figures indicate that there is ample margin for providing for, say, a 20 per cent. annual write-off, amounting to £47, which would have the effect of eliminating entirely any figure for land preparation after the first five years.

Spreading of Water: Although extra cost has been shown for this, it was actually done by the one man working on the farm without interfering with his usual duties. Allowance for the cost of spreading is made on the basis that one man can spread 15 to 18 acres per day and must do so about seven times a year.

Cost of Water: The cost shown is that at which water is available to all irrigators under the general scheme.

Cost of laying down Pasture: As pastures in this district have to be renewed every three years without irrigation, and as the irrigated pasture is as good as ever in the eighth season, the savings thus made have been allowed for. The loss in grazing value during periodic re-establishment without irrigation would be considerable, but has been neglected.

Topdressing: Allowance has been made for 1½cwt. superphosphate per annum. This is a heavier dressing than has recently been used. Lime is shown at 5cwt. per year, which represents 1 ton every 4 years. This is a heavier application than has actually been used, but it is nevertheless recommended for future work.

The total cost of topdressing has been shown as an additional expense, but it will be agreed that it would have been reasonable to omit at least a portion of this, as topdressing is a normal practice without irrigation.

Wool, Shearing and Baling Costs: The additional cost has been included under this heading, but is more than offset by the additional return in weight and quality of fleece, neither of which has been taken into account.

Summary

On the area irrigated the carrying capacity has been increased from one to six sheep per acre.

By irrigating 47 acres the net return of £327 indicates the possibilities of more extensive irrigation.

The original outlay in preparing the land and establishing permanent pasture is paid for in the first year.

No additional labour was necessary.

Permanent, high-producing pastures with a close sward are possible under irrigation.

The expense of re-sowing pastures every three years is obviated.

Grass-grub troubles have been greatly alleviated by irrigation.

Heavy crops of lucerne can be readily obtained.

There is a substantial increase in the weight of wool and lambs.

The ewes are healthy and show no signs of worms or footrot.

These light soils, in this climate, are ideal for, and respond remarkably to, irrigation.

This report has been compiled from records carefully kept on a small-scale trial on a one-man farm. It does not require a great deal of imagination to envisage the benefits which would accrue to the individual farmer, the rural and urban sections of the country, and the nation as a whole, if every farm requiring it were able to be reticulated to an irrigation scheme developed on the same lines.

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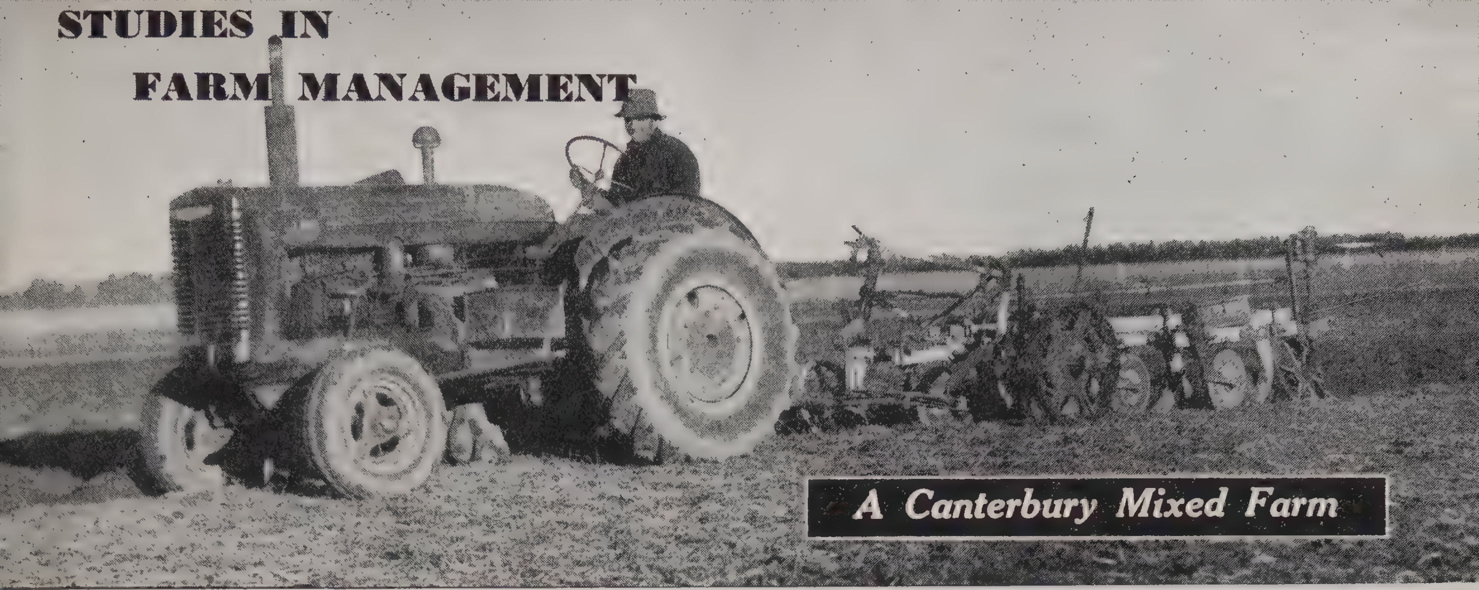
STUDIES IN FARM MANAGEMENT



A Canterbury Mixed Farm

MIXED farming in its truest sense can be said to be practised in the Ashburton County, where practically 28 per cent. of New Zealand's wheat crop is grown, 23 per cent. of the total pea crop, and almost 20 per cent. of the oats. In addition some 10,000 acres of ryegrass and over 3,000 acres of cocksfoot are cut annually for seed, while over three-quarters of a million sheep are shorn each year.

By

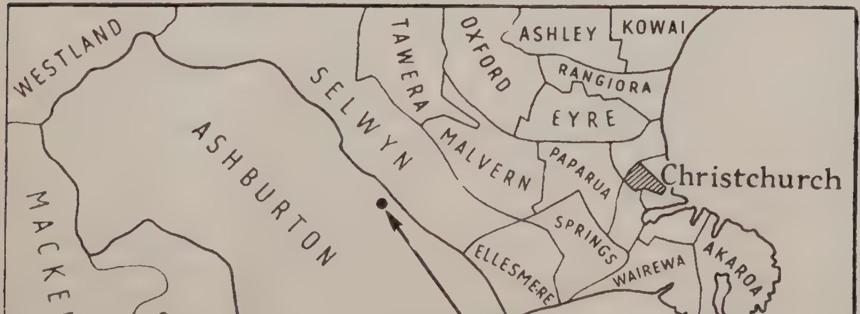
G. K. McPHERSON,

Instructor in Agriculture, Ashburton.

MID-CANTERBURY, or the Ashburton County, as it is frequently called, occupies the stretch of country lying between the Rakaia River in the north and the Rangitata River in the south. Comprising some 1,281,000 acres, approximately half this area lies between the foothills and the Alps, and consists largely of high, rugged snow country, used almost exclusively for sheep farming. The plains area of the county, consisting of approximately 673,000 acres, rises in a gradual slope from sea level to a height of nearly 1,200ft. at the foothills. The county possesses two other rivers of importance, the Hinds and the Ashburton. The latter runs almost through the centre of the county, and consists of two main branches, which join approximately 12 miles from the mouth of the river. Ashburton, the principal town in Mid-Canterbury, lies on the north bank of the Ashburton River, and roughly 10 miles from the sea.

Soil Types

Underlying the soils of the plains area of the Ashburton County are gravel or shingle beds of indeterminate depth. These beds consist of closely-packed greywacke gravel interspersed with sand, and are believed to have been formed as the result of glacial action. The very fine particles comprising the soil and subsoil which cover these great gravel beds have also been derived from greywacke rock, and have been deposited principally as the result of the action of wind. The geological term for this type of soil formation is a "loess," or wind-blown deposit, the depth of which varies throughout the county, thus giving rise to soils varying in texture, water-holding capacity, and also fertility.



Drawn at Head Office, Lands & Survey Dept Wgtn. '44

In addition to the loess formations, water-borne or alluvial deposits also occur, chiefly along the Ashburton and the Hinds Rivers, and also on portions of the land nearer the coast between the Ashburton and the Hinds. A recent survey of the county by the Soil Survey Division, Department of Scientific and Industrial Research, has disclosed 46 different soil types. The plains area of Mid-Canterbury, however, can be broadly classified into 4 soil groups based on the system of farming practised.

1. Light cropping land.

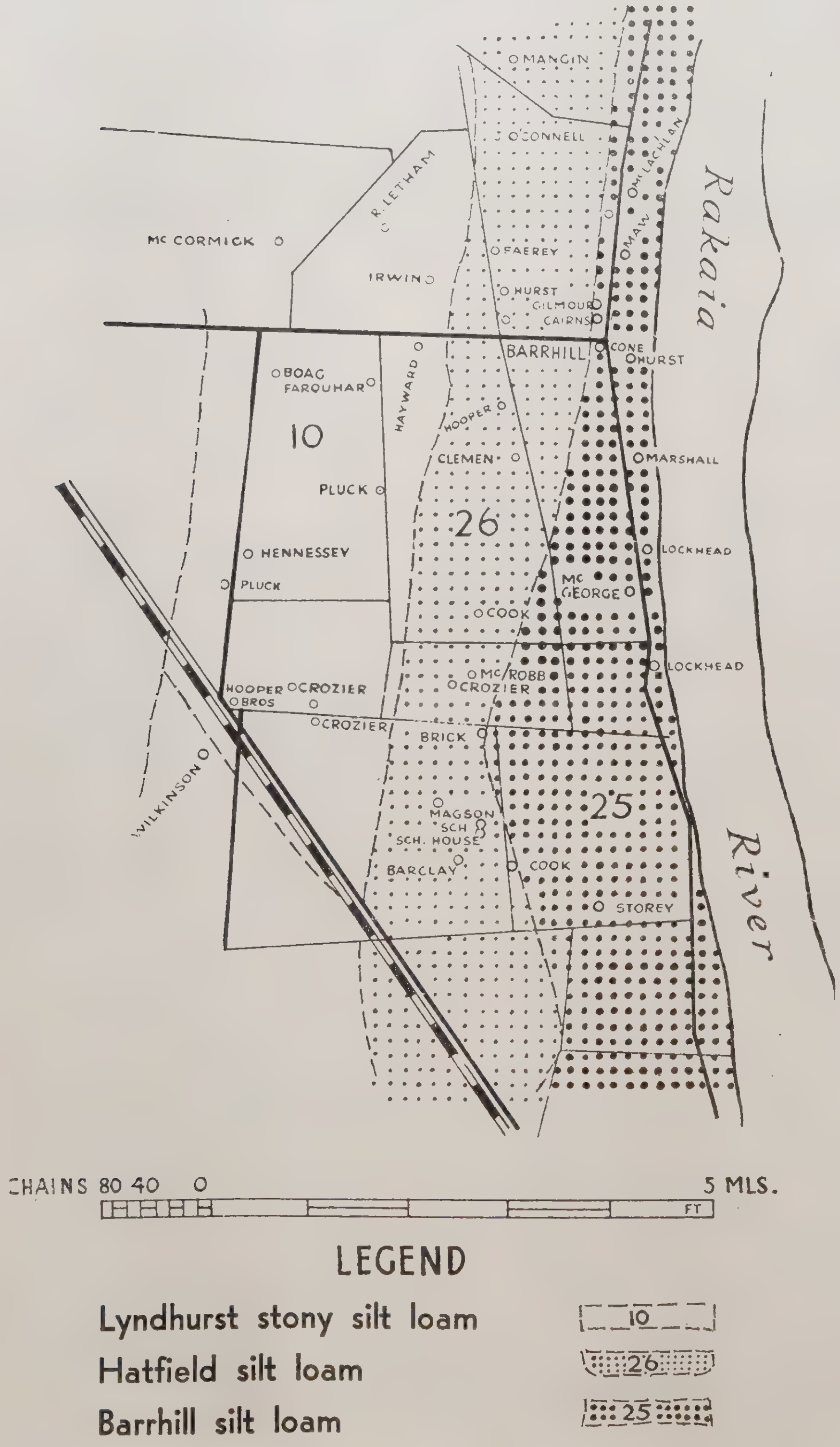
The land is not heavy enough for wheat production, and carries permanent pastures only for two to three years. Pastures quickly tend to revert to such species as browntop, sweet vernal, Yorkshire fog, suckling clover, and hair grass. Pasture renewal is associated with the growing of rape, turnips, and occasionally oats. Main products are wool and lamb.

2. Medium cropping land.

Cash crops are oats, wheat, grass seed, and potatoes. Greenfeed, lupins, rape, and turnips are also grown. Actually it may be marginal wheat land where oats may be a better proposition. Duration of pastures is 2 to 3 years. Wool and lamb are principal sources of income.

3. Medium to good cropping land.
Cash crops are wheat, oats, peas, potatoes, grass seed, and clover seed; turnips and rape are also grown. It is good average wheat land; wool and fat lambs are also produced.

4. Heavy cropping land.
Cash crops are wheat, oats, barley, peas, potatoes, grass seed, and clover seed. Above cropping may be associated with dairying or the production of cocksfoot seed. Turnips and rape may be grown. Fat lamb and wool are also produced; good wheat and pea land; pastures 3 to 4 years.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CHAINS 80 40 0
5 MLS.
FT
LEGEND
Lyndhurst stony silt loam 10
Hatfield silt loam 26
Barrhill silt loam 25

Climate

Mid-Canterbury enjoys a very wide range of climatic conditions. Near the coast the rainfall approximates 26in. annually. This fall gradually increases in amount until the foothills are reached, where the total rainfall for the year reaches, in places, 46in. Over the greater part of the plains land, however, the rainfall varies between 28in. and 38in.

In the matter of temperatures there is also a similar wide variation throughout the county. Snow is almost unknown along the coastal belt, whereas most of the land approximately 800ft. or more in height usually receives one or more falls of snow each year. In some cases the snow may lie on the ground for a fortnight or more. In summer the temperatures are usually very warm, and, with hot drying winds prevailing, the air invariably has a low humidity content.

It is the combination of soil type with a flat topography, a moderate rainfall, and a low atmospheric humidity during the summer months which makes Mid-Canterbury the premier grain-growing district in New Zealand. Again the soil types, combined with the moderate rainfall, are not conducive to rank pasture growth, and half-breds are the predominating breed of sheep carried.

Crop Production

The Ashburton County has frequently been referred to as the granary of New Zealand. That this term is well earned is disclosed by the figures below.

TABLE 1.

Grain and Pulse Crops for Threshing.

	Wheat.	Oats.	Barley.	Peas.
		Acres.		
Dominion Average. Seasons 1939-40—1942-43 .	261,432	61,899	30,742	30,049
Ashburton County Average 1939-40—1942-43 .	72,254	11,510	2,566	6,937
Ashburton County per cent. of Dominion total ..	27.64	18.59	8.35	23.08

These figures show that almost one quarter of the Dominion acreage of the principal grain and pulse crops are grown in the Ashburton County. The county possesses approximately 230,000 acres of good wheat land and a further 240,000 acres of what might be termed marginal wheat land, that is, land on which wheat is grown in varying amounts, but on which the per acre yield is usually appreciably below the Dominion average.

TABLE 2.

Grasses and Clovers Cut for Seed—Ashburton County.

	Acres.			
	1939-40.	1940-41.	1941-42.	1942-43.
Perennial ryegrass	5,930	10,468	9,553	7,719
Italian ryegrass	1,944	4,285	2,843	2,587
Cocksfoot	3,778	3,665	3,246	3,058
Red clover	626	667	1,098	2,217
White clover	74	569	513	1,154
Browntop	1,765	990	1,000	450

With the advent of certification the production of small seeds, particularly ryegrass, has increased very considerably in recent years. This branch of farming is confined mainly to the medium to good and also the heavy cropping land. Small seed production works in admirably with the production of cereals and also fat lambs.

TABLE 3.

Total Cropping—Ashburton County.

	1939-40.	1940-41.	1941-42.	1942-43.
	Acres.			
Total grain and pulse crops (including oats) for chaff and greenfeed	122,169	134,783	140,817	133,998
Rape	26,655	26,538	23,476	24,158
Turnips	39,517	35,920	30,243	28,329
Kale and chou moellier	121	333	4,582	4,302
Swedes	—	—	2,579	2,366
Other greenfeed	4,619	5,248	4,785	8,570
Linen flax	—	1,366	1,968	1,703
Mangolds	403	430	291	389
Potatoes	1,091	883	727	1,312

TABLE 4.

Livestock—Ashburton County.

	1939-40.	1940-41.	1941-42.	1942-43.
Horses	7,386	6,606	6,041	5,306
Total cattle	17,695	17,239	16,452	15,321
Dairy cows in milk	7,862	7,457	7,044	6,722
Number of sheep shorn	886,618	838,575	808,282	793,290
Number of lambs tailed	640,918	627,544	591,053	615,478
Total pigs	5,294	5,450	4,892	4,726

The increasing popularity of the tractor is reflected in the number of horses shown above. In 1929 the county possessed 10,282 horses.

Dairying is practised to a very limited extent. Figures for 1942 show that the whole of the county possessed only 69 milking machines. There are very few straight-out dairy farmers—most farmers treat dairying as a sideline, milking only a few cows.

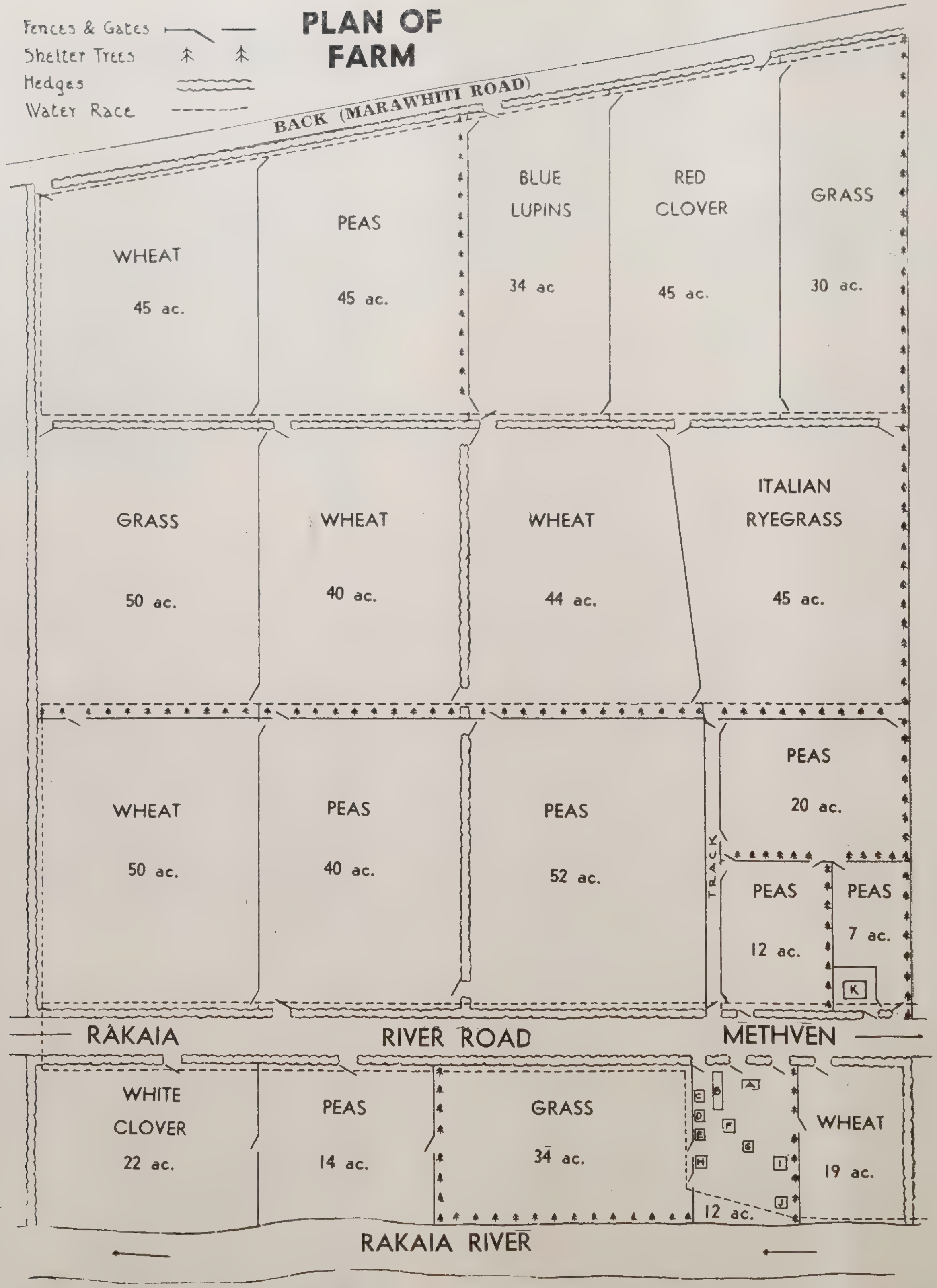
The county carries a large number of sheep for the production of fat lambs. Indeed, the farming economy of the county is built up largely around wool and fat lambs.

A MID-CANTERBURY MIXED FARM.

Mention was made earlier in this article that the county possesses 46 different soil types. Allied to this is a very marked variation in the climatic conditions from the sea to the foothills. It is little wonder, therefore, that a very wide range of farming systems operate throughout the county. Even under similar conditions of soil and climate farm management systems often vary to a very marked extent. Neighbouring farmers may both produce wheat and fat lambs, but there the similarity in their farming methods very often ends. The relationship of crops to grass, the type of rotation practised, methods of cultivation, methods of harvesting, and many other relevant factors may, and very often do, differ. It is extremely doubtful, therefore, if in any particular locality a farm can be selected where the farming management adopted could be considered entirely typical of the district. A description of the property of Mr. J. G. Marshall, "Balraize," Rakaia, however, will give the reader some indication of the farming methods practised on some of the heavier, more fertile land in the county.

Mr. Marshall farms a property of 660 acres of flat land situated on the banks of the Rakaia River, and approximately 9 miles from Rakaia township on the main Rakaia-Methven road. The soil, classed as the Barrhill silt loam, is free from

IN MID-CANTERBURY


PLAN OF FARM
Fences & Gates
Shelter Trees
Hedges
Water Race
BACK (MARAWHITI ROAD)
WHEAT 45 ac.
PEAS 45 ac.
BLUE LUPINS 34 ac.
RED CLOVER 45 ac.
GRASS 30 ac.
GRASS 50 ac.
WHEAT 40 ac.
WHEAT 44 ac.
ITALIAN RYEGRASS 45 ac.
WHEAT 50 ac.
PEAS 40 ac.
PEAS 52 ac.
TRACK
PEAS 20 ac.
PEAS 12 ac.
PEAS 7 ac.
K
RAKAIA RIVER ROAD METHVEN
WHITE CLOVER 22 ac.
PEAS 14 ac.
GRASS 34 ac.
A
B
C
D
E
F
G
H
I
J
12 ac.
WHEAT 19 ac.
RAKAIA RIVER

A. Homestead. B. Grain and implements. C. Grain shed. D. Implement shed. E. Tool shed. F. Tractor shed. G. Married quarters. H. Married quarters. I. Cow shed. J. Single men's quarters. K. Woolshed and dip.

surface stones. It is freer than the other wind-blown soils, owing to its greater content of sand. It drains freely. The shingle lies more than 6ft. below the surface. Barrhill soil contains a high amount of available phosphate—much more than the loess soils of Chertsey and Seafield, but there is nevertheless a response to phosphate topdressings.

The farm contains 20 paddocks, varying in size from 7 to 50 acres each. Most of the paddocks are oblong in shape, which is a tremendous advantage from the point of view of cultivation. Shelter is provided by plantations and gorse hedges.

Water for stock is supplied in every paddock by means of stock races, which usually follow the fence lines. Main races leading from the rivers carry the water to positions where it may be distributed to individual farms, the whole water supply system being under the control of the local county council.

Crops and Pastures

For several years now the aim has been to have approximately one third of the farm in wheat, one third in peas, and the balance in pasture and small seeds. In October, 1943, the following position obtained:—

	Acres.
Wheat	198
Peas	190
Pastures	126
Mother Seed white clover	22
Pedigree Montgomery red clover	45
Government Stock Italian ryegrass	45
Blue lupins	34
Total (crop 422 ac., pastures 238 ac.)	660

Wheat

The wheat area grown represents one acre in every 3.3 acres of the farm. This may be considered excessive if continued over too long a period, and in future the acreage devoted to wheat may have to be reduced somewhat in order to retain soil fertility at its present level.

Some of the wheat follows peas in the rotation, the balance following Italian ryegrass or other grassland. To maintain a high yield and also to minimise the risk of "take-all" two successive crops of wheat are not attempted. Experience has shown that where wheat follows wheat the second crop may show a reduction in yield of 10 bushels or more per acre compared with the first crop. Varieties grown are Cross 7 and Fife Tuscan, the acreage of each in any one year depending on the paddocks available. Fife Tuscan is a later-maturing variety than Cross 7. By growing an area of each variety the harvest is therefore spread out over a longer period, and this is a distinct advantage when a large acreage of crop has to be handled. Cross 7 is usually sown on what are considered the richest and best paddocks.

When following peas the pea stubble is skim ploughed or treated with the one-way disc plough in late March or April. The skimming is then grubbed several times during the latter month, the object being to carry out the bulk of the cultivation work before the deep ploughing takes place. During May the land is deep ploughed to a depth of about 6in., and if wet weather does not intervene, one grubbing after the ploughing is usually sufficient to make the land fit for drilling.

Grassland for wheat is usually skim ploughed towards the end of the year and allowed to lie fallow all summer. From then on the cultural operations are similar to those where wheat follows peas.

In preparing the land for wheat Mr. Marshall aims at securing a good depth of cultivation, at the same time avoiding as far as possible obtaining too fine a tilth on the surface. Unless the surface is left somewhat rough, the winter rains have a tendency to consolidate or pack the ground to such an extent that in the spring the wheat may assume an unthrifty appearance. Moderately-sized clods left on the surface tend, however, to protect the young wheat throughout the winter months, and in addition the action of the frosts eventually breaks down the clods, resulting quite often in a friable surface tilth in the spring.

The wheat is all drilled during May-June at the rate of 100lb. of seed and 1cwt. of superphosphate per acre. Before drilling the wheat is treated with a dry pickle, either ceresan or agrosan. Should a favourable growing winter be experienced with growth well forward, it is a common practice to graze the wheat, both the Cross 7 and the Fife Tuscan, with sheep in the spring. A large mob of sheep is used to graze off each paddock as quickly as possible. It has been found that where this practice is adopted the wheat is less susceptible to mildew later on in the growing period. During September the wheat is harrowed and rolled. Usually one harrowing is sufficient, but if a wet winter is experienced and the soil is inclined to pack down hard, two or three harrowings may be necessary. If it is intended to sow down the area to grass, the grass mixture is broadcast on the wheat before harrowing and rolling. All crops are direct headed, the grain being transported by motor lorry from the paddocks to mills or storage depots. Yields have varied with the season, the lowest average over the whole area for one season being 40 bushels per acre and the highest average 60 bushels. Burning of the wheat stubble is not practised.

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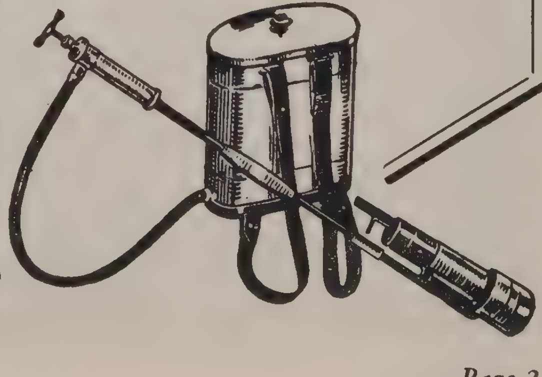

MID-CANTERBURY FARMING SCENES

Header harvesting

Skim ploughing

Direct heading peas

Headed peas

Part of flock

Shepherd and dog

Peas

That the locality is a particularly suitable one for growing peas may be deduced from the extent to which this crop figures in the rotation. Last season the acreage devoted to peas almost equalled the wheat acreage. Peas follow both grass and wheat. When following grass the paddocks are usually skim ploughed in June, grubbed several times during the winter, and deep ploughed in August or September. When it is intended to follow wheat with peas the wheat stubble is cultivated with a one-way disc plough and lupins broadcast as soon as possible after the wheat is harvested. The lupin crop is then ploughed under for green manure in August in preparation for peas in mid-September and early October. The varieties grown are:—1. Prussian Blue; 2. Marrowfat; 3. Mammoth Blue. The first-named variety is sown at the rate of one bag or 3⅓ bushels per acre, and both marrowfat and Mammoth Blues at the rate of 4 bushels per acre. Superphosphate at the rate of ¾cwt. per acre is applied with the peas. All pea crops are harrowed at least three times in the early stages of growth with a special set of light harrows in order to control annual weed growth. The first harrowing is usually carried out before the peas show through the ground. After the final harrowing the ground is rolled to make a smooth surface and thus facilitate harvesting operations.

The advent of the header harvester some years ago undoubtedly did much to popularise pea growing in the Ashburton County. Instead of the old laborious process of mowing the crop and carting it into the mill to be threshed it is the usual practice now to harvest pea crops with a header harvester. Some farmers first of all cut the crop with a mower; the header with a pick-up attachment then travels immediately behind and picks up the swathe. Where weed growth is prevalent, or where it is desired to obtain peas of a good colour, the crop is left in the swathe for several days before it is picked up. Under such circumstances, however, there is always a possibility of considerable loss should strong winds occur. Another common method of harvesting the crop is to direct head it. Whichever procedure is adopted depends largely on the type of machinery available and the condition of the crop. The type of land also plays an important part, as it requires to be free from stones and clods if the crop is to be direct headed.

Yields on individual paddocks have varied between 30 bushels and 70 bushels per acre, with a general run of 40 to 50 bushels per acre. Yields of peas following grass are usually slightly better than where the peas follow lupins, but the difference is not very significant. Partridge peas have been tried on the farm, but Prussian Blues and the other varieties now being grown yield equally as well.

Thus it will be seen that the two principal rotations practised on the farm are as follows:—

1. **Grass—peas—wheat (sow down with wheat).**
2. **Grass—wheat—blue lupins for green manure — peas — wheat (sow down with wheat).**

Blue Lupins

With the very heavy cropping programme practised an endeavour has been made to conserve and maintain the humus content of the soil. None of the wheat stubble is burnt, and in addition lupins are introduced into the rotation wherever possible for ploughing under for green manure. The 34-acre paddock shown on the plan of the farm with a crop of blue lupins was ploughed under for green manure and is now growing a crop of Italian ryegrass. Each year, in addition, blue lupins are broadcast on a further 100 acres or more of wheat stubble after the stubble has been cultivated with one-way discs. The bulk of this area is also ploughed under for green manure.

Pastures

Grazing pastures are established by sowing down in the spring on autumn-sown wheat. The usual mixture broadcast has been as follows:—1 bushel perennial ryegrass and 3-4lb. broad red clover per acre.

Montgomery red clover now replaces ordinary broad red clover in the pasture mixture. The pastures are in no way permanent. Most areas remain down for two years, although some may be grazed for three years. Owing to the restrictions in the use of phosphates no topdressing is carried out, but about 100 tons of lime has been applied annually to the young grass paddocks at the rate of 1 ton per acre.

Italian Ryegrass

On many of the heavy land farms in Mid-Canterbury the production of small seeds is associated with the production of wheat and fat lambs. Mr. Marshall usually sows one paddock in Italian ryegrass each autumn. This may follow peas, which is not very satisfactory, as it does not permit of sufficient fallow, or it may follow lupins sown on wheat stubble in the autumn and ploughed under in the late spring for green manure. Certified Government Stock seed, when procurable, is drilled during February or March at the rate of 1 bushel of seed and 1cwt. of superphosphate per acre. The area is grazed at intervals throughout the winter and early spring and then closed for a seed crop. The crop is windrowed with either a power mower or a binder and picked up with a header. Yields have varied between 30 bushels and 45 bushels of machine-dressed seed per acre.

Clover Seed Production

In addition to Italian ryegrass certified clover seeds are also produced. An endeavour is made to harvest an area of white clover and one of Montgomery red clover each year. Both these clovers are established by sowing down in a cereal crop. For the establishment of Montgomery red 4lb. of seed per acre are broadcast with 1 bushel of perennial ryegrass, and in the case of the white clover 2 to 3lb. of seed per acre are broadcast, also with 1 bushel of perennial ryegrass. Once the sward is established these areas are grazed at intervals as required. The white clover area is usually closed for seed about the end of October, and the red clover area about the third week in December. The latter is harvested by direct heading, while the white clover is windrowed and picked up with the header. Seed yields have varied, depending on seasonal conditions.

Livestock

The Barrhill district is claimed to be a particularly suitable one for stock, but in view of the heavy cropping programme practised and, in addition, the production of certified seeds, the stocking of the farm is probably lower than the average for the district. Mr. Marshall carries what might be termed a floating population of sheep, the number carried throughout the year varying between 500 and 1,000, depending on the amount of feed available. The practice is to retain the lower number mentioned and buy in extra sheep in the autumn to control the growth on

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the Italian ryegrass and the young grass paddocks. These sheep are retained on the farm until the paddocks are closed for small seed production in the late spring and summer. The sheep are half-bred ewes and hoggets, the number of each varying from year to year, depending on circumstances. The former are mated with Southdown rams, and any surplus which cannot be carried on as paddocks are closed for seed production are usually sold in the late spring.

Recently Mr. Marshall acquired some stud Romneys and stud Southdowns, and his aim is to increase these to the number which can be conveniently carried throughout the 12 months.

During the period when surplus feed is available sheep will be purchased to control the growth, or the feed may be sold. With the exception of a few cows for house use, no cattle are carried on the farm. One hack is available for sheep work; but there are no draught horses.

Supplementary Feed

It will be noted that with the exception of blue lupins no special provision is made for fattening or winter feed for the stock in the way of rape, turnips, or swedes. However, it is found that any fattening necessary can be done on the pea stubble or the Italian ryegrass. The sheep seem to winter quite satisfactorily on the Italian ryegrass and the young grass paddocks, but a paddock of lupins may be fed off if necessary. In the event of snow a good reserve of clover and grass hay is always on hand. To replace the latter it is intended during the coming season to establish a stand of lucerne.

Implements

The machinery on the farm includes two 30 h.p. tractors, one the conventional type and one the all-purpose type, two 6ft. header harvesters, a 3- and a 4-furrow plough, a set of one-way discs, power mower, binder, and a complete range of all other necessary implements. Taking into account the area sown in lupins after wheat, over 500 acres are cultivated annually, and this necessitates the use of two tractors. Two headers are also essential, as, with over 400 acres of crop to direct head, together with about 60 acres of grass and clover seed to pick up, full advantage must be taken of any suitable heading weather which does occur.

Labour Requirements

Two married men are employed permanently, one a tractor driver and the other a tractor driver and general farm worker. In addition some casual labour is employed at odd times, but mainly to assist at harvest time with the heading operations.

Buildings

Buildings include an implement shed, a grain shed, and a 2-stand wool shed. There are also a circular dip and sheep yards. The grain shed has an open front, which is very useful for conditioning wheat and also for the storage of grain whenever this may be necessary.

Shelter Belts

In view of the flat nature of the country and the strong, cold winds experienced at times, farm shelter is very essential in Canterbury. Gorse fences are a common sight throughout the county, and Mr. Marshall on his 660-acre farm has almost 6 miles of gorse fences. There has been a tendency in latter years to replace some of the gorse fences with shelter belts of various kinds. A fine belt of *Cedrus deodora* runs through the centre of Mr. Marshall's property, and there are also plantations of pines, gums, and other trees.

Conclusion

These are the farming methods practised on one of the more intensely cultivated arable farms in Mid-Canterbury, where wheat occupies a prominent place in the cropping programme. The farm is situated on a strip of fertile land along the banks of the Rakaia River, and the crop yields are naturally very considerably higher than the average for Mid-Canterbury. The ratio of grain and pulse crops to grass on this farm is approximately 2 to 1, and for this particular soil type this probably represents the limit to which one may proceed in the matter of cropping, having due regard to the maintenance of the soil in good heart.

Acknowledgments

Thanks are expressed to the Director, Soil Survey Division, Department of Scientific and Industrial Research, for the material in the soil map and drawing of the map.

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By

H. M. PEIRSON,

Superintendent of the Pig Industry, Wellington.

WHEN a sow produces a good litter the owner usually gets as much kick out of it as if he had collected on the last sweepstake. He takes a reasonable pride in the event, and tells his friends, but perhaps he also wonders just how it happened to be so good, because he can recollect numerous incidents that were likely to do harm to the sow while she was in-pig.

Although the exercise of care at the right time and the intelligent use of the best information are likely to give results, there is no royal road to success in the production of good litters. If there were, these would be commonplace, but instead of that poor litters, with resultant loss and disappointment, make pigs unprofitable on many farms.

What is a Good Litter?

A good litter should weigh between 300 and 400lb. at eight weeks old, and the greater the number of piglets—within reason—the better. Ten pigs of 30lb. each are better than six piglets of 50lb. each. In most cases it is not the sow's fault that she has a poor litter, since in nine cases out of ten she can produce a good litter when next she farrows. **Where neglect occurs at and before farrowing** subsequent attention is a disappointing waste of time.

The table below gives a lead as to how they can be classified, but the highest figures shown are by no means the limit of the productivity of a sow.

The records of both the Waikato and the Manawatu Pig Recording Clubs show that a litter of 400lb. live weight at eight weeks is not uncommon, while in a number of cases 600lb. has been reached.

High weight is not always associated with large numbers per litter, although it is an observed fact that the majority of high-weight-producing litters are above nine pigs per litter. It has also been noted that few pigs per litter are not always the heaviest pigs at eight weeks.

AVERAGE OF LITTERS AT 50lb. INTERVALS.

8 Weeks. Litter Weight.	No of Litters	Pigs.		Loss % Birth to Weaning	Weight at—			
					3 weeks.		8 weeks.	
		Born.	Reared.		Litter.	Piglet.	Litter.	Piglet.
101-150lb.	46	8.8	4.3	51%	41lb.	9.5lb.	126lb.	29.3lb.
151-200lb.	82	8.0	5.6	30%	59lb.	10.5lb.	178lb.	31.8lb.
201-250lb.	101	9.1	6.8	25%	78lb.	11.5lb.	218lb.	32.1lb.
251-300lb.	105	9.5	7.9	17%	87lb.	11.0lb.	274lb.	34.7lb.
301-350lb.	76	10.5	9.3	11%	98lb.	10.5lb.	328lb.	35.3lb.
351-400lb.	38	11.0	9.5	13%	120lb.	12.6lb.	374lb.	39.3lb.
401-450lb.	19	11.2	10.6	5%	132lb.	12.5lb.	422lb.	39.9lb.

In general, where management is good, there is little difference in the weight of the individual pigs in small and large litters. While heavy weights at eight weeks and large numbers per litter are both equally important, uniformity of the pigs in the litter is also essential. Good feeding and management will, for the most part, give results.

Many Pigs per Litter

Many pigs per litter can usually be obtained by attention to a number of details. First, the sow must be in rising condition at the time of service. It must be appreciated that the production of good litters is associated with the shedding of the eggs from the ovaries of the sow during the heat period. The actual onset of heat and the number of eggs produced during this period are determined in the sow, as in every other animal, by the amount of improvement in the condition of the sow at that time. This improvement is commonly spoken of as "flushing." In the sow this flushing automatically takes place immediately after weaning, and is due to the re-absorption of the milk from the udder into the sow's body. It is probably because of this automatic flushing that heat occurs so regularly within three to six days after weaning. It is also probably true that where the first heat period is missed difficulty is subsequently experienced in getting the sow to hold to the boar.

Many owners at weaning time turn the sow out into a bare paddock, and reduce her feed-supply. When a sow has weaned her litter she should not be starved to dry up the milk supply, nor should half the litter be let back to take the milk from her. Both these practices undo that automatic flushing. If the sow is in low condition at weaning time, feed her well, as this will assist to bring about that regular heat period and the normal functioning of the ovaries. Having sows in low condition and poorly fed after weaning may result in delayed heat period, or the shedding of only a few

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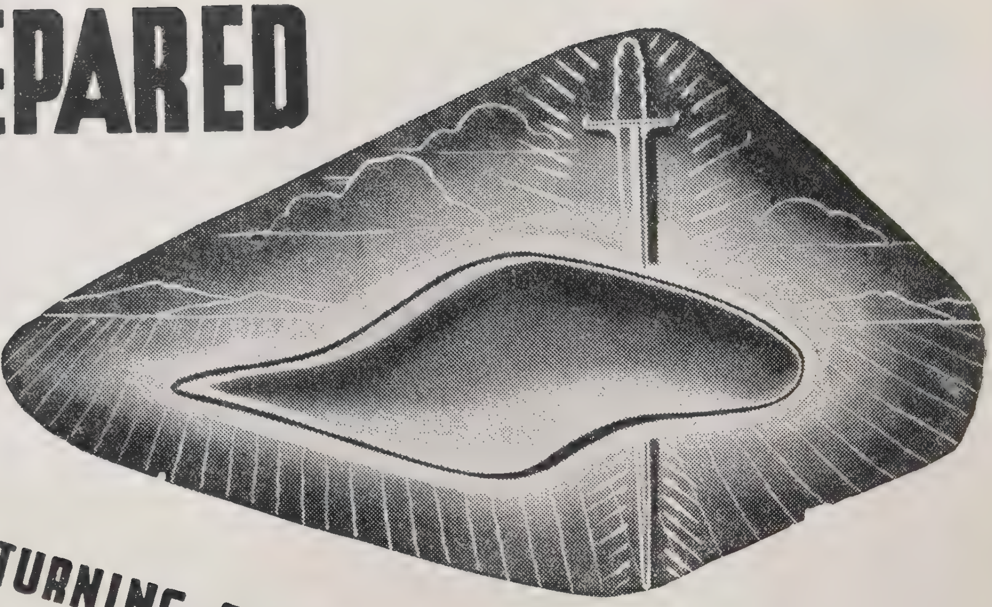

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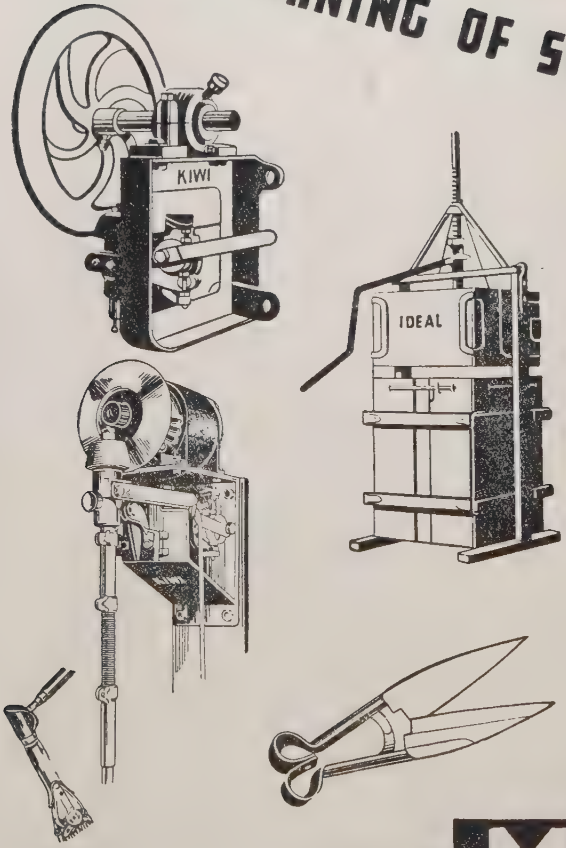

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eggs, and can be responsible for many of the disappointments from some excellent sows. How often we hear resentment expressed of some breeder from whom high-priced animals have been purchased, and which have not produced up to expectation. Quite often the disappointments are not the fault of the breeder, but can rather be attributed to the system of management and feeding to which these animals have been subjected since their purchase. Poor treatment does not allow the animal to develop along the right lines. Any improvement in the management of a sow will be shown many times over in the quality of the progeny produced.

Time of Service

A sow in rising condition sheds 18 to 24 eggs over a period of from 24 to 36 hours, at each heat period. These eggs are shed one at a time, and if service takes place when only a few eggs have been shed, then only a few will fertilise and a small litter will result.

The sperm of the male remains active in the uterus for about 8 to 10 hours, so that if service takes place 24 hours after heat begins, all eggs shed up to 32 to 36 hours will be fertilised. If these points are appreciated, the sow will be served ideally, that is, with every prospect of a big litter, about 24 to 36 hours after she comes in heat. Perhaps the best policy to follow would be to give one service when the sow is well on heat, and a second one as late as the sow will stand service.

Holding to the Boar

Not all the eggs that are fertilised live. Causes of death are not usually disease or hereditary, although these can be factors. The common upsets encountered during pregnancy, such as chills, constipation, indigestion, or other internal upsets, frights, hurts, and ill-treatment generally should be guarded against. If the owner, as far as possible, attends to these things, he has laid the foundation for a big, healthy litter, and, provided the sow is reasonably treated for the next four months, he should not be disappointed.

Development of Unborn Litter

Experimental work at the Cambridge University some years ago on in-pig sows showed that, a few days after service, there were the implantations of 20 fertilised living embryo, with a corresponding number of yellow bodies in the ovaries. A month after service the implantation of 20 fertilised embryo and corresponding yellow bodies was again found, but only 16 to 18 of the embryo were alive. Two months after service the evidence of 20 implantations was still to be found, but only 14-16 of the embryo were alive. Three months after service only 10 to 12 foetuses were found, and at four months 10 pigs were farrowed. In all, about 50 sows were slaughtered at different stages in collecting this information, and it was found that on the average the same number of eggs were fertilised per sow, but that as the months went by the number surviving got less and less, until only half the number fertilised were born alive.

While at birth the experimental sows produced an average of 10 live pigs, some produced dead pigs, some weakly ones that died after birth, and some, of course, produced litters of even-sized, normal pigs.

The explanation appears to be that a sow sets out to produce a maximum number of offspring, but finds, as time goes on, that this cannot be maintained. This may cause the restriction of the blood supply to any foetus, and stop its development. Once the blood supply is cut off the foetus ceases to live, and, if time permits, it is absorbed back into the maternal system. If the blood stream has been cut off later in the pregnancy period, the little pig may be born dead, absorption having been impossible in a short time. If, on the other hand, the blood supply has been only partly restricted, the pig will be delivered in an under-sized, weakly, or undeveloped condition, and may survive to be the runt of the litter.

Deaths After Farrowing

It is at this stage that the greatest obvious losses occur. The fact that many pigs die between birth and weaning is well known, and the results of the work done in this direction put the proportion at about 20 to 25 per cent., more than half being lain on by the sow in the first three or four days after birth, chiefly because of either clumsy over-fatness or irritation due to her being unaccustomed to her surroundings. There is no doubt that some of this loss is preventible by consideration on the part of the owner, and, if only partly eliminated, would be a real source of profit.

The use of farrowing-rails has been recommended, and these are widely used, but in many cases are so badly erected that they become death-traps rather than a preventive measure. When one considers the circumstances, that the little pigs are unaware of the danger of being over-lain, that they are slow to move, and that initially they do not know where safety lies, it is essential that proper care be exercised in the erection of farrowing-rails. The dead pig gets no second chance of escape, so the more rational approach to the problem seems to be by way of the sow. It is a common experience that the greatest loss occurs with old sows and with sows that are over-fat. Here are the clues to treatment—don't let sows get over-fat prior to farrowing, and see that they are upset as little as possible at farrowing time. Sows on grass in spring tend to get over-fat, and in order to keep them right it seems necessary to bring them into their farrowing quarters three weeks or more before the event, in order to feed them so as to keep them in a thrifty but not too fat condition. This helps too in that sows have time to get used to their new quarters, and have time to settle down. Sows are often brought in just before farrowing, their food is changed, their activities are curtailed, the condition of their bed is altered, and every physical circumstance is changed.

If the sow is temperamental and resents close confinement, this upset is added to all the others, any one of which is sufficient to prove her undoing at this critical stage. Where the sow is not too fat and is happy in her surroundings she has every opportunity of finishing up with a maximum number of the offspring that are born. In some cases it entails the attention of the owner during farrowing, but if this means a saving of two or three pigs per litter, the time thus spent is well repaid. However, if attention is given to all other details, the sow may be safely left to herself at farrowing time.

(To be continued in April issue).

Pig Industry Broadcasts

UNDER the auspices of District Pig Councils broadcasts will be delivered in April as follows:—

Auckland.—1YA, on April 18, at 7.15 p.m., "The Crop and Its Special Purpose," by C. Wallace, Supervisor, Waikato District Pig Council.

Dunedin.—4YA, on April 9, at 7.15 p.m., "Losses Incurred from Live to Dead Weight," by H. McDonald, Supervisor, Otago District Pig Council.

Napier.—2YH, on April 12, at 7.30 p.m., "Bacon Competitions and What is Behind Them," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

Palmerston North, 2ZA, on April 18, at 7 p.m., "Avoiding Losses in Pig Production," by L. L. Marsdon, Supervisor, Wellington District Pig Council.

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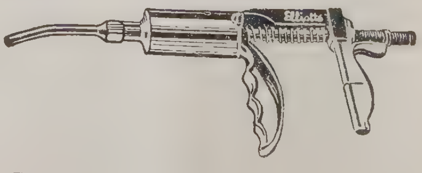

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Control of Mastitis of Dairy Cows

THE loss occasioned to the dairy industry through inflammation of the udder is higher than from any other disease, 4 to 4.5 per cent. of cows being culled annually because of mastitis, and in addition there is considerable loss of milk from quarters which are either obviously or mildly affected. Thus the life of the cow in the shed is limited largely by her ability to resist mastitis.

By

C. S. M. HOPKIRK,

Superintendent, Animal Research Station, Wallaceville.

MASTITIS is an infectious disease due to several organisms which are able to grow in the quarter and to set up inflammation of the udder tissue. The degree of inflammation and damage to the tissues may depend on the type of organism present, together with the number and rapidity of growth, and also on the state of health of the cow.

Symptoms of Mastitis

Symptoms of mastitis are well known to all dairy farmers, but can be described simply as **clinical** and **subclinical.**

In clinical mastitis, where quarters have become swollen, hard, painful, and hot, the condition is looked upon as acute, whereas chronic mastitis is that form where the quarter shrinks and the milk is discoloured.

In both acute and chronic mastitis udder tissue is damaged and does not readily recover function, so that considerable loss of milk is occasioned.

Subclinical mastitis is a form not easily recognisable by the farmer, where flakes may sometimes be seen in fore-milk, or a little hardness be felt in the udder tissue after milking, or even where there is a temporary inflammation of a mild character which quickly subsides. Such cows are definitely dangerous in the herd as reservoirs of infection, and should be recognised as such.

Organism Responsible

In New Zealand there are, as a general rule, two types of organism responsible: 1. **Streptococcus agalactiae,** which produces the majority of obvious or "clinical" cases; and 2, a **Staphylococcus,** which produces a milder form of intermittent inflammation or a less obvious "subclinical" type.

In addition rare cases of mastitis occur from a toxic strain of **Staphylococcus** and from coliform organisms, while **Micrococci** and **Diphtheroids** generally produce a mild inflammatory reaction. Summer mastitis known in England is almost unknown here.

Origin of Infecting Organisms

The **Streptococcus** lives and increases in the udder of a cow. As far as is known it does not propagate to any extent outside the udder. An affected cow is thus a reservoir of infection for the herd.

The **Staphylococcus** is a skin organism found on all skin surfaces, and more particularly growing round the teat orifice and on the teat surface. Both these types of organisms grow well in milk.

Entry Into Udder

It is generally believed, and there is nothing to prove otherwise, that both **Streptococci** and **Staphylococci** gain entrance via the teat orifice. After entering into the teat they become established in the udder tissue, and there produce an inflammatory reaction.

All methods of milking tend to permit or assist organisms to gain entry through the teat orifice, but rough hand milking, or milking by poorly-adjusted machines, or the spread of sore or cracked teats increases the incidence.

Prevention of Mastitis

Present-day knowledge is too incomplete to lay down definite rules for prevention. However, considerable benefit will accrue by observing rules of cleanliness and common sense. These can be expressed in order:—

1. Cows should be driven in from the paddocks quietly and not rushed in with a rough dog.

2. The entry into and exit from a milking shed should be a built-up road or concrete runway. Dragging through mud is conducive to sore teats and sore teats to mastitis. Rough stones in the mud also injure the feet and produce foot-rot.

3. Heifers should enter bails first for milking, then clean cows, and finally known affected animals. It is preferable to keep special bails for heifers.

4. As cows enter the bails they should be prepared for milking. Bail-

Left.—Concrete roadway into shed. Right.—Clean, airy shed, with excellent floor and clean woodwork.

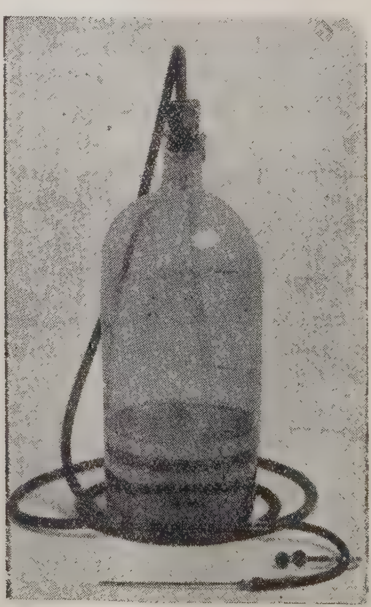
ing up and leg-roping are usually practised, but many farmers train their cows to stand without leg-ropes. Washing of the udder should not be carried out until the cups are nearly available for transfer, and then all mud and filth should be removed as completely as possible. Abrasions, etc., of the teats should be noted for treatment. Washing water should be warm with antiseptic added. The excess moisture should be removed with a wrung-out cloth, and finally each quarter should have fore-milk ejected into a bucket or strip cup to see whether it is normal. The cow is a creature of habit, and this process of washing and trial stripping has induced her to "let her milk down." The cups should therefore be placed in position on the teats immediately, otherwise the udder muscle fibres tire and the cow becomes a stripper.

5. Milking should be quickly carried out; 3-5 minutes, or, if the cow is a little difficult, 8 minutes should be the outside limit. As soon as the sight glasses show that milk has stopped flowing the cups should be transferred or hung up. Before taking off the cups they should be pulled down to get the last of the milk from the reservoir of the gland. Little or no hand stripping should then be required. Machine stripping is a common practice in New Zealand. There is no lowering of butter-fat production by this method.

6. In order to kill organisms on the skin of the teat an antiseptic solution should be applied in a mug or other receptacle before and after milking. Teat cups should also be dipped into a bucket of antiseptic solution between each cow so as to kill organisms left in the cups.

7. The usual antiseptic for this cleansing is one of the hypochlorites. Several brands are on the market. They should be used in a strength of about 1000 parts per million on teats and 500 parts per million for rinsing teat cups. Great care, however, must be exercised to see that an antiseptic solution is not

Strip cup.



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Left.—Concrete exit from shed. Right.—Bad exit to paddock from shed.

drawn up into the machine to mix with the milk. Should that happen, tainted butterfat will be observed with consequent degrading at the factory. A bucket of antiseptic for teat cups should do 12 cows.

Better wartime antiseptics which may be more suitable for this work are expected to be found for future use in the industry.

8. Sore teats require a healing salve dressing before cows leave the shed.

9. Milkers' hands should be kept clean. Frequently, if cracked and sore, they become infected with **Streptococci** and are a danger to cows.

10. **The milking machine should be properly cared for.** Not only should it be mechanically perfect, but inflations should be kept tight and removed when necessary, and machine parts should be tested from time to time.

Cleanliness as advised by dairy officials is necessary not only to keep milk fit for consumption but also to control disease and to increase the life of rubberware on the machine.

Sight glasses should be placed in all bails where they can be observed easily by the milker.

11. The shed and yards should be kept clean by daily washing down so that no flies will breed about the shed, and if leg-ropes are used they should be washed and hung up to dry.

12. Calves should be kept from good producing cows known to be resistant to mastitis, for there appears to be some inherited influence in many families of cows.

13. Rich, flush pasture should be rationed by an electric fence or other means, and good hay provided to give balance and roughage during the early flush. There is incomplete but suggestive evidence that indigestion in cows will cause subclinical quarters to flare up to clinical, with, perhaps, loss of the quarter.

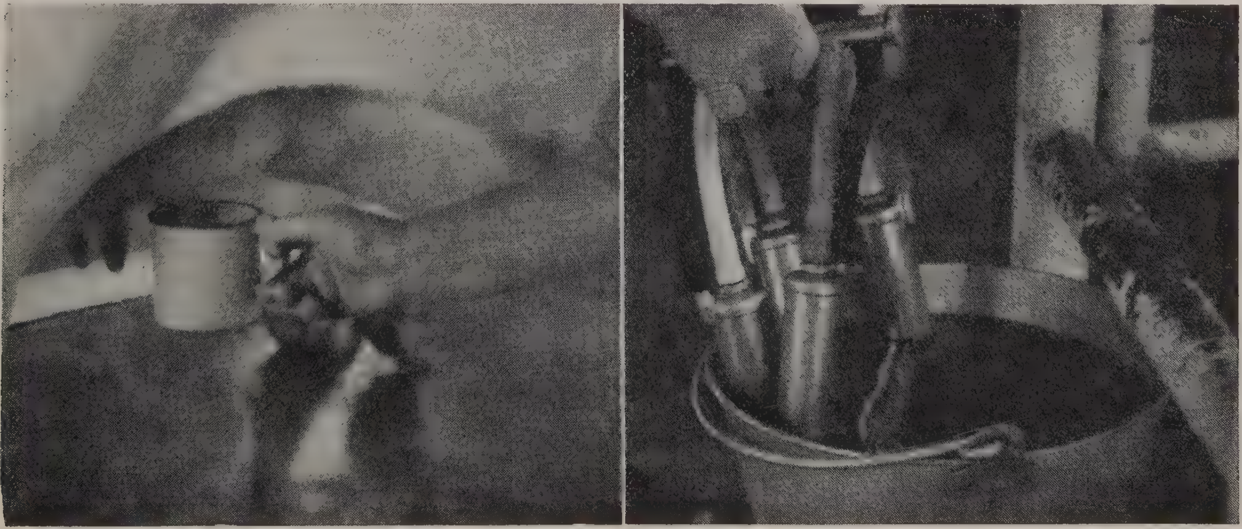
14. The majority of known affected quarters can, with advantage, be dried off. A dry quarter is resting and in some cases returns to normal milk production the following lactation.

What to do With Affected Cow

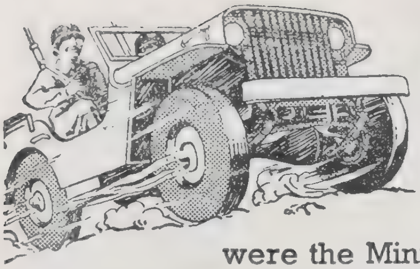
1. In all cases of known mastitis the cow should be milked after healthy animals. **Cups should never be placed on affected quarters.** Treatment is on the whole disappointing. Therefore, the drying off of quarters is the best method in the shed.

2. A cow with two or more quarters affected should, as a general rule, be culled, for she becomes uneconomical.

3. Where a quarter has recently become clinical it may be treated at



Left—Dipping teats in antiseptic solution before and after milking. Right.—Dipping teat cups in bucket of antiseptic solution between cows.



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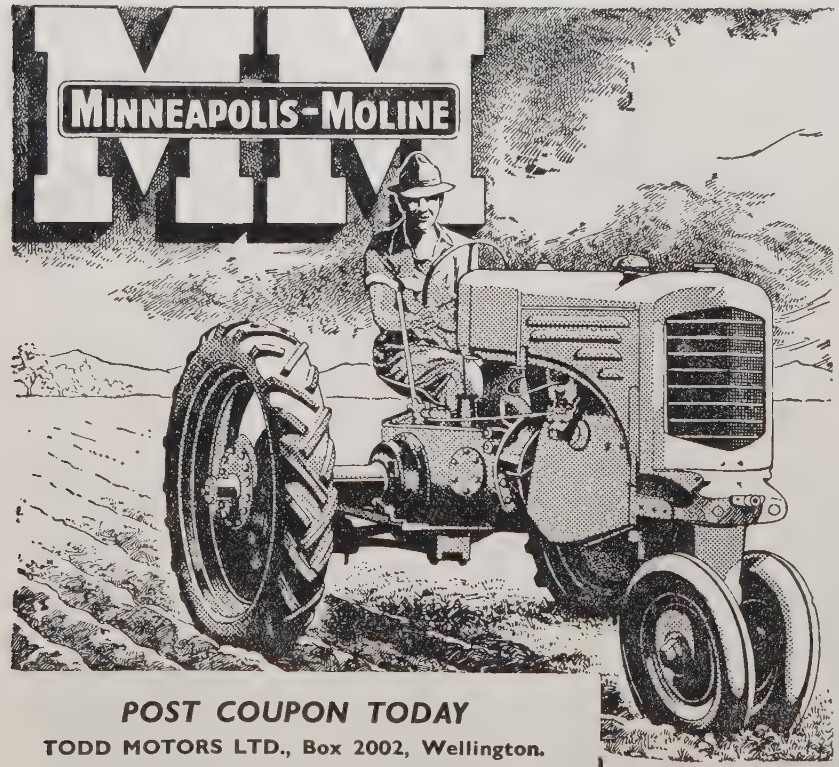

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once or dried off and treated when the cow is dry.

4. Calves may be placed on affected cows. There is no definite experience to prove this to be unwise, and until proof does come to hand affected cows may often rear very good calves.

5. Treatment of affected cows.

No **external treatment** can cure mastitis. Liniments used to massage the udder to reduce the swelling are helpful, for massage facilitates the evacuation of pus. Such treatment should be carried out every 3-4 hours.

Internal treatment is partially successful with some strains of **Streptococci.** Sulphanilamide given by mouth is the drug of choice, and should be obtained by prescription from your veterinarian.

Vaccination is not recommended.

Infusion of drugs into the udder is the best-known method of treatment. A number of drugs are in use, but that obtained most readily by the farmer and giving fair results in **Streptococcal** mastitis is acriflavine. Acriflavine is used in a 1-10,000 solution for cows in milk, or, if the quarter is dry, 1-1000 solution.

The quarter is first stripped out, then a small quantity of acriflavine introduced and milked out. Finally, the quarter is filled with solution. Where the cow is in milk the 1-10,000 solution is milked out in about 10 minutes' time, while in dry cows the 1-1000 solution is milked out 24 hours later. The whole process may have to be repeated to effect a cure.

In buying acriflavine a 1 per cent. solution could be obtained from the chemist. Six c.c. of this is used in a pint of boiled water for cows in milk.

Laboratory Examination of Samples

Should a stock-owner require to have samples of milk examined as an aid to cleaning up mastitis in his herd, the examination is carried out at Wallaceville.

Parcels, well packed in case of breakage, should be posted to the Chief Diagnostic Officer, Animal Research Station, Wallaceville, Private Bag, Wellington, or railed to Wallaceville Railway Station.

NITRATE OF SODA.

IT was expected that ample supplies of nitrate of soda would arrive from Chile in January, but owing to shipping difficulties it appears unlikely that supplies will be freely available until April or May. Market gardeners and others using nitrate of soda are therefore advised to do their utmost to conserve what limited supplies are at present available.

Swede-Cocksfoot-Red Clover Association In Rotorua District

WITH very few exceptions most clearly-defined farming districts in the Dominion possess at least a few definite practices peculiar to themselves, which, while based chiefly on conditions appertaining to their local soil types and climate, may also be governed by such factors as the financial resources of farmers and the availability of suitable labour, etc. In this respect the large area of pumice country surrounding the township of Rotorua can safely be numbered with the rest of rural New Zealand.

OF particular merit so far as the pumice country is concerned is the practice established in the early days of local land settlement, whereby the maximum use is made of red clover and cocksfoot in association with the swede crop. While, possibly, this old practice is of recent years less prevalent than it was, due mainly, in the writer's opinion, to the strict limitations placed on land development since the commencement of the war, it can confidently be expected that a return to normal times will see its complete revival, especially by those engaged in breaking in virgin land.

In most districts where swedes are grown it is more or less customary to sow them alone, or possibly in conjunction with a little chou moellier. Again in many such districts it is often not difficult to get a first-class crop of swedes on land ploughed for the first time from its original native condition. With the average pumice soil types, however, a good root crop on the first furrow is more the exception than the rule, owing to the general lack of humus, and therefore nitrogen, in these geologically young soils.

By

C. R. TAYLOR,

Fields Instructor, Rotorua.

Clovers Thrive

Fortunately, the members of the clover family thrive exceedingly well in these circumstances if fed with from 1½-3cwt. of phosphate fertiliser, such as superphosphate, serpentine superphosphate, or slag. Red clover (cowgrass) grows to a luxuriant density in a short space of time, and in the process enriches the soil to such an extent that its selection by the farming community for this purpose alone was a most logical one. For this reason swedes and red clover were commonly sown together—1lb. swedes and 5lb. red clover, the latter not competing seriously with the former owing to its not coming to full maturity until after the swedes had finished growing. In the meanwhile, however, the young red clover plants were busy enriching the soil with nitrogen to the immediate benefit of the swede crop.

Very frequently in the early days settlers also sowed up to 15lb. Italian ryegrass or western wolths with 5lb. red clover in their swede crop, but it was found that this type of grass had a serious smothering effect on the swedes and consequently reduced their yield greatly. At a later stage cocksfoot was substituted for Italian ryegrass, etc., while the quantity used was reduced to 5lb. per acre. This combination of root crop, grass, and legume at once proved most successful, and, with but slight modification in the direction of increasing the cocksfoot from 5lb. to between 8lb. and 10lb. per acre, the practice has stood the test of time, although, as stated previously, it is not quite as prevalent today as it was when land development was in full swing prior to the war.

Association's Advantages

To the settler of modest means who is at the threshold of breaking in a piece of virgin pumice country the practice of sowing red clover and cocksfoot with a swede crop possesses some very definite advantages apart from that referred to above in connection with the soil improvement capacity of red clover. In the first place the settler is naturally anxious to get in an area of pasture as quickly as possible on which to run sufficient stock—usually dairy cows—to return him an income to supplement or offset expenditure of his capital. By sowing red clover and cocksfoot—two pasture species which do strikingly well in the pumice country—with a swede crop the growth of swedes is materially

Left.—Excellent swede crop on light pumice soil of Rotorua district. Drilled in with swede seed were 5lb. red clover, 3lb. cocksfoot, and 1lb. timothy. Right.—Same field ready for cutting for hay two years later. Without resowing to pasture after feeding off swedes a dense growth of cocksfoot, red clover, and timothy came away, and was cut regularly for several years for hay and ensilage.

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improved, while the grass and clover carry on for several years, if need be, without the necessity of immediately re-sowing to pasture following the swedes. Thus at least a year of valuable time is saved at a stage in a new settler's career when it is most precious.

A second advantage attaching to this practice is that stock grazing swedes without a run-off on to grass very seldom do well; on the contrary they frequently develop digestive disorders, such as the serious complaint known as red-water. However, stock thrive excellently when grazing swedes associated with a good blending of red clover and cocksfoot, and to the busy man time saved in turning stock into and out of the swede area is very valuable indeed.

And thirdly the combination of red clover and cocksfoot after the swede crop is finished makes splendid material for ensilage in the spring or hay a little later. The aftermath growth will then carry on well into the following winter, to come away again early in the spring; during this time, providing growth is well controlled and not allowed to become rank and woody, excellent grazing is available for the production of beef, mutton, or butterfat. On the other hand it is customary for some farmers purposely to permit growth to become rank subsequent to the hay crop, and then to use it the following winter as a run-off to swedes and other root crops where these have been sown alone. That good results have even followed this system of management merely illustrates the versatility of the practice and emphasises its importance to a district whose surface is "barely scratched," notwithstanding the fact that tremendous progress has been made over the past 10 to 15 years.

Then to Permanent Pasture

After being down in red clover and cocksfoot for two or three years the land can be ploughed and sown to permanent pasture, or ploughed and sown in swedes, and after the swedes are eaten off disced and sown in permanent grass the following spring.

Alternatively, the temporary sward of red clover and cocksfoot can be disced and harrowed sufficiently to prepare a reasonable seed-bed, and then oversown with 15-20lb. certified perennial ryegrass, 3lb. cocksfoot, 1lb. timothy, and 2lb. certified white clover, thus converting it into a permanent pasture with the least expenditure of money and labour. Should the original plan envisage a temporary pasture of red clover and cocksfoot for a longer period than 2 to 3 years, say, up to 5 years, the inclusion of 1lb. certified white clover, as an addition to the basic mixture, is a wise procedure practised by many successful pumice country farmers.

A good topdressing of superphosphate or serpentine superphosphate requires to be applied at time of oversowing, followed by a further harrowing to cover the seed. As red clover is not altogether an unmixed blessing, some care is necessary at this stage to see that it is kept under sufficient control by grazing or topping to prevent it from smothering the young establishing seedlings of ryegrass and white clover. Over-sowing can be undertaken during either spring or autumn, the latter season usually being preferred.

In conclusion it may be stated that under the conditions described cocksfoot behaves very differently from when it is sown as a component of a permanent pasture mixture. As a constituent of a swede-red clover crop mixture cocksfoot is given every chance to come to full maturity before being grazed to any extent, and in such circumstances its vigour is so improved that it produces a prolific growth of succulent herbage for 10 months in the year. When sown in a permanent pasture mixture cocksfoot seldom attains a similar degree of vitality, owing to the punishment it invariably receives from the grazing animal, particularly sheep, due to its high palatability. Moreover, cocksfoot generally takes much longer to establish or develop than ryegrass, with the result that it is often grazed far too severely at an immature stage; thus, during the period of its whole life, it may be detrimentally affected.

Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA, Auckland, at 7.15 p.m. on the following dates:—

April 9, "The Rabbit Pest," by Mr. H. R. Denize, Principal Inspector, Livestock Division, Department of Agriculture, Auckland.

April 16, "The Establishment of Lucerne and its Value to the Farmer," by Mr. A. V. Allo, Instructor in Agriculture, Department of Agriculture, Tauranga.

April 23, Y.F.C. Session, by Mr. W. Alexander, member of the Auckland Young Farmers' Clubs' Council.

April 30, "Trends in Fertiliser Manufacture and Use," by Mr. G. H. Holford, Fields Division, Department of Agriculture, Wellington.

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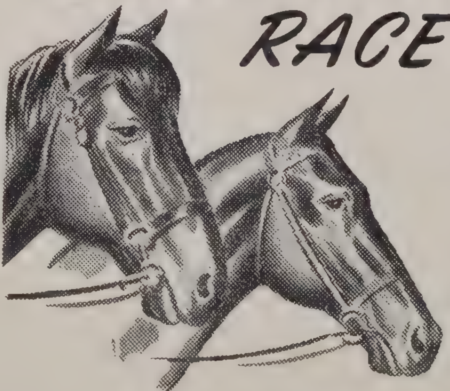

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["Farmer Weekly" photo.

10,000,000 BUSHELS OF WHEAT FOR 1945-46

NEW Zealand is not normally self supporting in wheat. To ensure that our own needs are met during the war farmers have been asked to grow 300,000 acres annually. However, our consumption of wheat has increased, and it may require a greater acreage than 300,000 to meet our requirements. In the years immediately prior to the war we grew approximately 200,000 acres, and during the six war seasons we have averaged 237,000 acres. The need for New Zealand to make herself self supporting in this most important of primary products has been brought home to us by the drought in Australia and its effect in limiting supplies from that source for this country. To make certain that our needs are met without drawing on overseas supplies required for rehabilitation of the war-stricken areas New Zealand must make herself self supporting in wheat.

By **J. E. BELL,**
Land Utilisation Officer,
Wellington.

Farmers have been asked by the National Council of Primary Production to produce 300,000 acres of wheat next season, an increase of over 50 per cent. on that produced in the past season. Actually, with a normal crop, 312,000 acres will be required to produce the 10,000,000 bushels of wheat which it is estimated will be required.

Difficulties in the Way

Will farmers be able to plant 300,000 acres in the coming season, and what are the difficulties in the way?

At present the fertiliser ration for wheat is 2cwt. per acre in the North Island and 1cwt. per acre in the South Island. Judging by the poor response of wheat to dressings of fertiliser in recent years in Departmental trials, the ration for the main wheat-growing areas in the South Island is a liberal one. The present ration of fertiliser for wheat should not deter any farmer from growing wheat, except in poor soils in the higher-rainfall areas, and farmers are not expected to grow wheat on such soils. In low-rainfall areas it is very doubtful whether the crop can make full use of the fertiliser supplied under the ration.

On some wheat farms expansion is limited by the amount of ground in a fit condition to grow wheat. However, in view of the small area of wheat grown last season, there should not be many farmers who will need to limit their acreage on that account, and there will be few if any in that category outside the main wheat-growing areas of Canterbury and North Otago.

The potential wheat-growing areas of New Zealand amount to over 5,000,000 acres—that is, areas where soil and climatic conditions are not unsuitable for wheat growing. Of this, about 1,500,000 acres is located in Manawatu-Rangitikei, Wairarapa, and Hawke's Bay, where the soil is fertile and where almost all of it will be in a fit condition at present for wheat production. It would be foolish to ask that all this area be sown in wheat, for it is already being put to good use in the production of maize, other important crops, butterfat, fat lambs, and fat cattle. Certainly 20,000 acres of it would not be missed if it were used for the production of wheat, and the loss of grazing from the extra acreage in wheat would hardly be noticed.

Almost the same remarks could be applied to Southland and Central and South Otago, where the potentialities are also very great, and where normally small acreages are grown. In some of these areas in the North and South Island weather conditions are not as suitable for harvesting as in the main wheat-growing areas, but this is compensated for in part by the higher yields generally obtained.

In the main wheat-growing areas there are about 2½ million acres suited in every way to wheat growing. A large part of this area is devoted to cropping and the production of cereals, peas, potatoes, and fodder crops. Any increase in wheat production will be either at the expense of other cash crops or of fat lamb or dairy production. Nevertheless, because of the imperative need for wheat, it will have to replace these crops or animals.

The extra acreage required to be grown in this area will not cause much difficulty if all farmers co-operate and do their share. There are many farmers whose properties are suited to wheat production who do not grow any or only a few acres of wheat. There has been a large increase in the numbers of tractors and header harvesters on farms in recent years, which has made possible the rise in production in cereal crops during the war years, and there is sufficient machinery to meet our goal of 300,000 acres of wheat. That over 400,000 acres of wheat were grown in the 1891-92 season without these appliances emphasises the possibilities today.

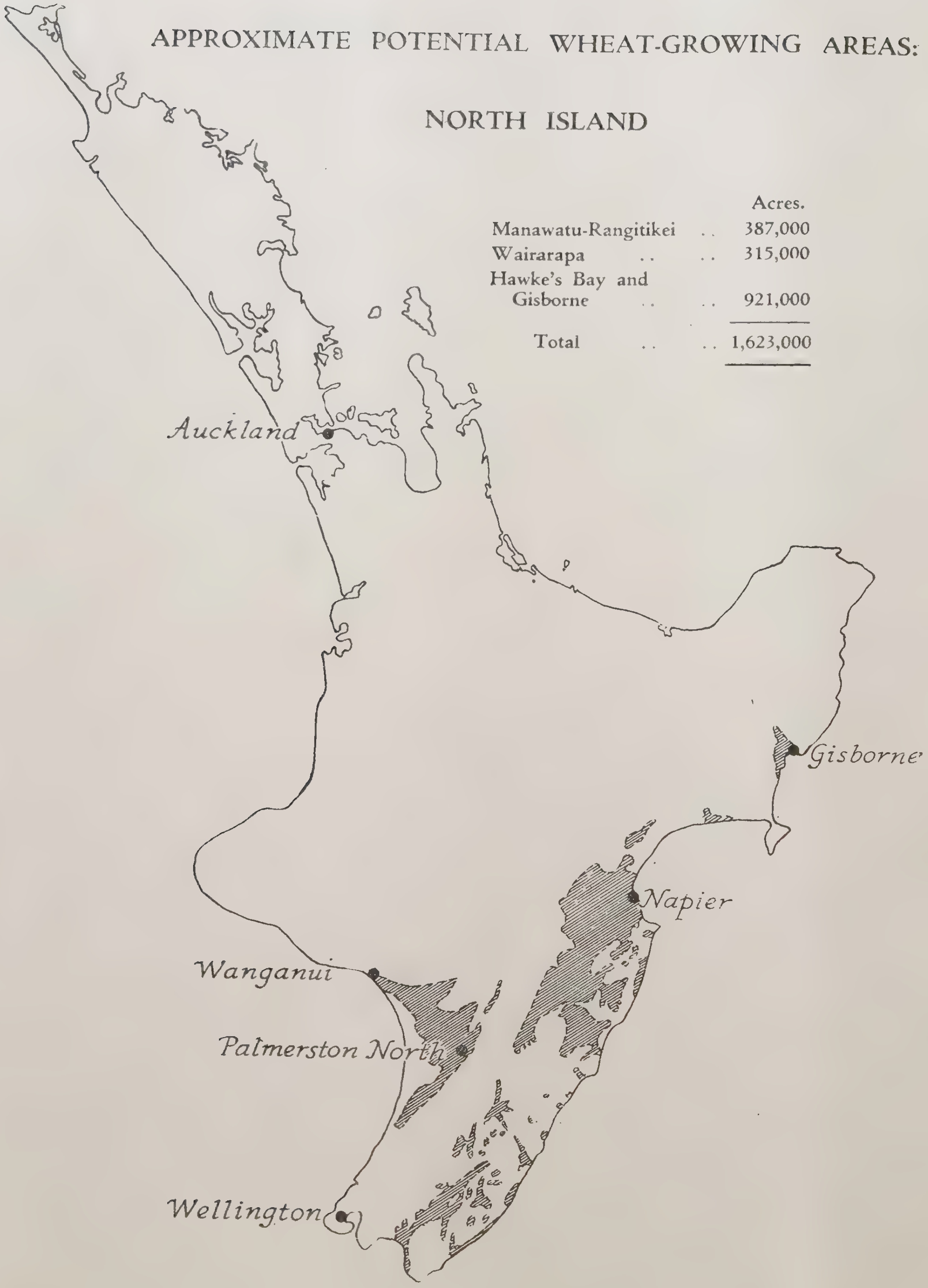
The labour difficulty is the chief concern of the farmer, for it is the one next to the weather which is most uncertain. The farmer cannot be reasonably certain of his labour unless it is of a class not required for Army service. No one can tell how far the call for men to serve in the Armed Forces will reach or whom it will claim. Nevertheless, farmers should have no fears that assistance will not be available to harvest the crops once they are planted. The saving of crops by assistance from the Army and volunteer workers from some small towns when the need was urgent has shown that the country will not permit crops to go unharvested, and certainly not a crop of the vital importance to the nation and the world that wheat is.

In wartime it is not always possible to advise farmers well in advance of requirements. On many farms, particularly in arable areas, the work is planned well ahead, and on these the farmers will find difficulty in changing their plans to meet the demands that have been announced in regard to wheat production. This particularly affects the farmer who can increase his area only by working up the lea land for autumn sowing.

With a full realisation of the difficulties facing the farmer, it is to be hoped that the goal of 300,000 acres will be reached, and it is fully expected that a large increase in the area normally sown will be attained. If every farmer with suitable soil and climatic conditions on his farm plants as large an area as his facilities for doing so will permit, then the objective will be reached.

APPROXIMATE POTENTIAL WHEAT-GROWING AREAS:

NORTH ISLAND

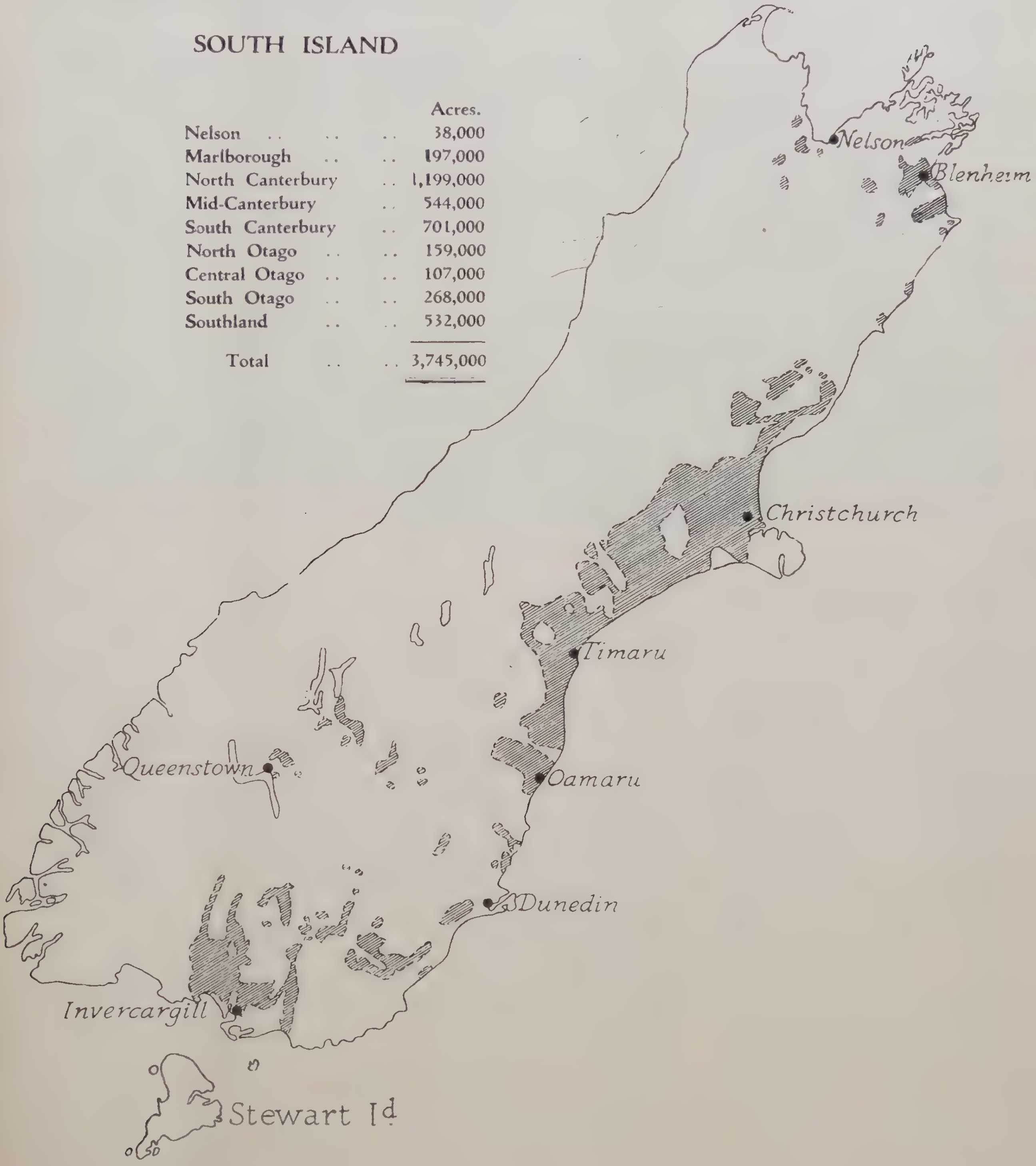

Auckland
Gisborne
Napier
Wanganui
Palmerston North
Wellington

	Acres.
Manawatu-Rangitikei ..	387,000
Wairarapa	315,000
Hawke's Bay and Gisborne	921,000
Total	1,623,000

APPROXIMATE POTENTIAL WHEAT-GROWING AREAS.

SOUTH ISLAND

	Acres.
Nelson	38,000
Marlborough	197,000
North Canterbury	1,199,000
Mid-Canterbury	544,000
South Canterbury	701,000
North Otago	159,000
Central Otago	107,000
South Otago	268,000
Southland	532,000
Total	3,745,000


Nelson
Blenheim
Christchurch
Timaru
Queenstown
Oamaru
Dunedin
Invercargill
Stewart Id

To reach the objective the following targets for districts covered by District Councils of Primary Prdouction have been suggested:—

District Council.	Targets. Acres.
Hawke's Bay	**3,500**
Wanganui	**3,750**
Manawatu	**3,750**
Wairarapa	**4,000**
Nelson	**1,500**
Marlborough	**12,000**
Northland	**89,000**
Ashburton	**75,000**
Southland	**54,000**
North Otago	**18,000**
Dunedin	**14,000**
Alexandra	**4,500**
Gore	**4,000**
Invercargill	**13,000**
Total	**300,000**

Varieties to Sow

In the report on wheat varieties by the Wheat Research Committee arising out of returns from the 1944 harvest the following recommendations were made in regard to the varieties to sow in the various areas:—

Central and South Otago and Southland. Over the whole of this area the good yield, stiff straw, tight chaff, and early maturity of Cross 7 make this variety eminently suitable. There seems to be no reason for retaining any of the varieties still grown sporadically.

Waimate and Waitaki. Dreadnought has consistently given highest returns in all areas where it can be grown successfully. Changing over to Cross 7 may entail severe losses in yield, which have to be balanced against ease and cheapness of heading. The change-over, it is suggested, should proceed cautiously to avoid possible considerable losses in yield.

Canterbury. For the lighter land Fife Tuscan is now the best variety. It has proved on the whole a better yielder than Tuscan. It does not possess the stiff straw of Cross 7, and therefore should not be grown on the heavier types of land where lodging may be expected.

For medium and good Tuscan country and for the lighter type of Hunters country Cross 7 is the best variety. It yields possibly a little more than Tuscan, resists lodging, and is a good header wheat.

For the heaviest wheat-growing land Hunters is generally the best wheat, but Dreadnought has grown much better yields in various places and may be considered as an alternative to Hunters. Neither of these is fit for heading.

Marlborough. Cross 7 is doubtless the most useful general-purpose wheat for Marlborough; Jumbuck, which has the advantage of earlier ripening, is, however, not fit for heading.

On the light plains Fife-Tuscan is probably the most suitable wheat; it is not suited for the heavy flat country.

Nelson. Cross 7 for earlier and Major and Tainui for later sowings probably are the most suitable varieties.

Hawke's Bay-Wairarapa. Cross 7 is the most suitable main variety, with Tainui for late spring sowings on good land in the Wairarapa.

Manawatu - Rangitikei. Tainui as spring wheat; Cross 7 on the heaviest land (Kairanga) if Tainui "goes down badly"; Cross 7 should be used with caution elsewhere, in view of the best yields of Cross 7 being 9 bushels less than those of Tainui in the Rangitikei County in 1944.

WATER FOR PIGS.

AS many farmers are now turning their pigs on to pastures due to diminishing dairy by-products, every care should be taken to ensure that an adequate water supply is provided. While the common limiting factor in the production of pig-meat is feed, of equal importance is a plentiful supply of clean water. Pigs will wallow in any convenient mud puddle, but they have a decided preference for cool, clean water to drink.

FARMING IN NEW ZEALAND

Livestock

THE breeding and management of livestock are the chief occupation of the New Zealand farmer. This article enumerates the Dominion's livestock and describes how the combination of good grass and breeding animals enables the country to produce and export economically such large quantities of meat, wool, and dairy produce.

By
P. W. SMALLFIELD,
Director of the Rural Development Division

NEW Zealand is essentially a pastoral country, and the main types of farming are pastoral farming, mixed farming, and dairy farming. Dairy farming is really intensive pastoral farming, for permanent pasture and hay and silage cut from permanent pastures form almost the entire feed of dairy cows. Pastoral farming with sheep and beef cattle is practised both extensively and intensively: in its extensive form wool or wool and store stock are the marketable products, while the intensive pastoralist produces lamb, mutton, beef, and wool. Mixed farm practice centres round the ewe flock maintained for the production of fat lambs, and the mixed farmer and intensive grazier depend largely on the extensive grazier for replacements for the ewe flocks and for store lambs, wethers, and cattle for fattening.

The pedigree or stud breeder stands at the head of the livestock industry, and supplies the necessary male animals to maintain the breeding of the Dominion's flocks and herds, which are broadly enumerated in table LI. The important classes of breeding stock are the 1$\frac{3}{4}$ million dairy cows, the twenty million breeding ewes, and the million cows and heifers of the beef breeds of cattle. Horses have continued to decline since the full enumeration quoted for 1942; in 1943 horses outside boroughs declined to 236,000, and in 1944 to 226,000. Sheep have increased since 1941 and total sheep in 1944 were over 33 million.

TABLE LI—LIVESTOCK.*

Horses—January 31, 1942:	
Draught	118,000
Spring-cart	45,000
Light and other	86,000
	249,000
Cattle—January 31, 1944:	
Dairy cattle:	
Cows in milk	1,648,000
Cows dry	51,000
Heifers	750,000
Other cattle:	
Cows and heifers ..	1,129,000
Steers and bulls	861,000
	4,439,000
Sheep—April 30, 1941:	
Rams	561,000
Breeding ewes	20,031,000
Dry ewes	923,000
Lambs	7,847,000
Wethers	2,390,000
	31,752,000
Pigs—January 31, 1944:	
Pigs under one year old	482,000
Boars, one year and over	14,000
Sows, one year and over	77,000
	573,000

*Excluding boroughs.

HORSES.

Until recently the horse was the common draught and transport unit on farms, but is now in a large measure being displaced by the tractor, motor lorry, and motor-car. The four- and six-horse teams formed the common power units on mixed farms, while two or three medium draughts performed the necessary cultivation and pasture management work on dairy farms. During recent years there has been a decline in the number of draught horses: in the five-year period ended 1942 draught and three-quarter-bred draught horses declined from 125,000 to 118,000, while in the same period farm tractors increased from 8,000 to 14,000.

TABLE LII—HORSES.*

	1938.	1940.	1942.‡
Draught and three-quarter draught ..	124,837	122,245	118,054
Spring-cart (including half draught) ..	48,062	48,561	44,586
Hacks and light working horses ..	77,169	73,227	71,509
Thoroughbred & other horses	15,085	14,534	14,448
	265,153	258,567	248,597

*Excluding horses in boroughs.
‡Last year of complete enumeration.

Working horses in the Dominion are generally Clydesdales or of the Clydesdale type, and teams of high quality and performance are found in the mixed farming districts. Most teams are maintained by home breeding: mares are usually mated to foal in October or November and worked to within a week or two of foaling, when the mare is turned out to grass and the foal weaned at four to six months of age.

Oaten chaff forms the chief feed for working horses in the arable mixed farming districts, while lightly worked horses on dairy farms ar grass fed. The normal chaff allowance for heavy horses in full work is 5 tons per annum, and the usual daily ration is 35 to 40lb. chaff with a half to a third of this ration on idle days when the horses are on pasture: this ration gives about 16lb. oats per day and may be supplemented with extra grain during periods of heavy work. The ration is divided into five feeds:

FARM HORSES

Until recently the horse was the common draught and transport unit on farms, but is now in a large measure being displaced by the tractor, motor lorry, and motor-car. The four- and six-horse teams formed the common power units on mixed farms, while two or three medium horses performed the necessary cultivation and pasture management work on dairy farms.

Working horses in arable farming districts are brought in from pasture at about 5.30 a.m., fed and groomed, worked a full four hours in the morning and a further four hours in the afternoon, and remain stabled until 8 p.m. to 8.30 p.m., when they are again turned out to pasture.

Six-horse team

Stabled horses

WORKING HORSES: Working horses in the Dominion are generally Clydesdales or of the Clydesdale type. Mares are mated to foal in October and November, when the mare and foal are grazed on pasture until the foal is weaned.

two are given before morning work, one at midday, and two in the evening. Horses are brought in from pasture at 5.30 a.m., fed and groomed, worked a full four hours in the morning and a further four hours in the afternoon, and remain stabled till 8 p.m. to 8.30 p.m., when they are again turned out to pasture. In cold weather horses are covered at night while out at pasture.

CATTLE.

Cattle are maintained for dairy and beef production: dairy production is generally very efficient, but in many pastoral areas cattle farming is subsidiary to sheep farming. Beef cattle are largely used to control pasture growth and destroy undesirable vegetation: they are the pasture implements of the hill-country sheep farmer, and early maturity is not the general aim, for cattle from 1½ to 3 years old are largely used for crushing second growth and cleaning up rough pastures. There is, however, a tendency to make more use of breeding cows for pasture control work and for the hill-country farmer to dispose of most of his weaned calves in the autumn to the intensive grazier for fattening.

The cattle population from 1921 to 1944 is given in table LIII, of which the most significant feature is the increase of a million milking cows by 1936.

TABLE LIII—CATTLE.*

Year.	Total Cattle.	Dairy Cows in milk.
1921	3,139,223	890,220
1926	3,452,486	1,181,441
1931	4,080,525	1,499,532
1936	4,254,078	1,823,358
1941	4,575,873	1,779,603
1942	4,641,714	1,777,239
1943	4,484,513	1,735,544
1944	4,476,223	1,668,505

*Inclusive of interior boroughs.

This great expansion of the dairy industry in the inter-war period was due to the development of improved grassland practices, which enabled high-class milk-producing pastures to be established on large areas of initially low-fertility land in the North Island. Pasture topdressing was the most important factor in securing this development. Decline in dairy cow numbers since 1936 has been due to labour and fertiliser shortages caused by war conditions.

Dairy Cattle

The majority of the dairy cows in the Dominion are grade Jerseys built up on a foundation of many breeds, the predominating strain being Shorthorn. Pedigree Jerseys and pedigree and grade herds of Ayrshires, Friesians, Milking Shorthorn, and Red Polls form the balance of the dairy cows, and each breed has a place in the Dominion's dairy farm economy. The popularity of the Jersey has been due largely to its early maturity, its high butterfat production, and the wise use of prepotent butterfat bulls in the formative period of the dairy industry. Ayrshires are favoured in the colder districts, Friesians for town supply, and Milking Shorthorns, with their general utility, find a place throughout the Dominion.

The trend covering the adoption of the Jersey as the main dairy breed is shown in table LIV, which has been taken from Hamilton's Survey of the Dairy Industry in New Zealand: in explanation of the table Hamilton states, "The figures for 1921, 1924, and 1928 are from official statistics, but no official figures have been collected since 1928: the 1938 figures are an estimate based on a continuance of past trends: proportions in which pedigree sires of different breeds are used are taken from the annual report of the New Zealand Dairy Board."

Dairy cattle are grazed on pasture throughout the year. The pastures

TABLE LIV—DAIRY BREEDS.*

Breed.	Dairy Cows.				Herd sires 1940-41.
	1921. per cent.	1924. per cent.	1928. per cent.	1938. per cent.	per cent.
Jersey	29.6	44.3	63.6	75.0	78.0
Shorthorn ..	56.0	39.6	22.0	8.0	5.6
Friesian ..	11.4	13.1	11.8	11.0	7.9
Ayrshire ..	3.0	3.0	2.6	6.0	7.8

*A Survey of the Dairy Industry in N.Z.—W. M. Hamilton, N.Z. Journal of Science and Technology, vol. XXIV—June, 1942.

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DAIRY FARMING

The majority of dairy cows in the Dominion are grade Jerseys built up on a foundation of many breeds, the predominating strain being Shorthorn. Pedigree Jerseys and pedigree and grade herds of Ayrshires, Friesians, Milking Shorthorns, and Red Polls form the balance of the dairy cows, and each breed has a place in the Dominion's dairy farm economy. The top photo is from the "N.Z. Dairy Exporter" and the lower one from the "N.Z. Farmer Weekly."

vary in type in different parts of the Dominion, but the main dairying pasture species are perennial ryegrass, cocksfoot, and white clover. Yorkshire fog also occurs in many pastures, and provided that the clover content of the pasture is high and the grass is well controlled by grazing, it contributes useful feed. In North Auckland and the warmer coastal districts of the North Island paspalum is an important dairying pasture plant, and it produces a great deal of summer feed. Pasture management has reached a high level of efficiency, and topdressing with lime and fertilisers, sub-division and rotational grazing, harrowing and mowing are all well-established practices. Good dairying pasture land produces 200lb. and over (up to 350lb. per acre) of butterfat per acre, although general production ranges from 100 to 150lb. per acre.

Hay and silage cut from permanent pastures form the main supplementary feed for periods of low pasture production, although annual crops and lucerne are also used to a limited extent. With pastures forming the main feed for dairy cows production is influenced by seasonal conditions and the amount of supplementary feed provided for winter feeding.

For adequate supplementary feeding two-thirds of a ton to a ton of hay or its equivalent is required for each dairy cow. Feeding should commence in the late autumn before good pasture growth has ceased, so that some pasture feed can be saved for the winter and early spring and a limited ration of protein-rich grass can be fed along with hay and silage or roots. The normal winter and spring supplementary feeding period extends from the end of May or early June to the end of September, and in years of poor growth may extend to the middle of October. Summer supplementary feeding may be required from the middle of January to the end of March or early April, but the period and extent of feeding depend very largely on the summer rainfall and the type of pasture. In the warmer districts paspalum is very much relied on for summer feeding, and lucerne is also used for this purpose. In the past soft turnips and maize were fairly widely grown for summer supplementary feeding, but with the advent of all-grass farming their use has declined, and the feeding of grass silage has been substituted.

Dairy herds are generally timed to calve in July-August, with somewhat later calving in the colder districts. Normal herd replacement requires the saving of heifer calves to the extent of about 20 per cent. of the herd. After receiving whole milk for 10 days the calves are reduced to a separated milk diet over a period of 10 to 14 days, and the separated milk is supplemented with meat or cereal meal, and calves weaned at four to five months. The type of grazing provided during and subsequent to the bucket feeding period is very important in calf raising. The best practice is to move the calves when three months old and onwards round the cow pastures three or four days ahead of the cows, particularly during the late summer and autumn, so that the calves get the best feed available and enter the winter in good condition. Many dairy farmers, particularly suppliers of cheese factories, do not rear their own herd replacements, but rely on bought in-calf heifers. Most of these heifers are reared by fat lamb raisers, who buy weaned calves from dairy farmers, mate them, and sell them just prior to calving.

The mean butterfat production of dairy cows shows considerable seasonal variation, and production from the 1923-24 to the 1943-44 season is set out in table LV. Feeding is the most important factor in per cow production, and at present improvement in feeding, particularly the fuller provision of supplementary feed, is the most important method by which production could be improved.

TABLE LV—BUTTERFAT PRODUCTION.

Season.		Tons of Butterfat (to nearest 100 tons).	Butterfat in million lb.	Cows in milk in thousands.	Butterfat per cow (to nearest lb).
1923-24	..	102,000	228.5	1,185	193
1924-25	..	107,600	241.0	1,196	202
1925-26	..	104,400	233.9	1,181	198
1926-27	..	115,500	258.7	1,182	219
1927-28	..	118,000	264.2	1,243	213
1928-29	..	129,000	289.1	1,291	224
1929-30	..	140,200	314.1	1,390	226
1930-31	..	143,800	322.0	1,500	215
1931-32	..	151,700	339.8	1,583	215
1932-33	..	177,300	397.1	1,724	230
1933-34	..	190,500	426.7	1,816	235
1934-35	..	183,000	409.9	1,828	224
1935-36*	..	192,300	430.9	1,823	236
1936-37*	..	203,500	455.8	1,805	252
1937-38*	..	191,200	428.4	1,764	243
1938-39*	..	179,600	402.4	1,744	231
1939-40*	..	194,900	436.6	1,740	251
1940-41*	..	210,500	471.5	1,780	265
1941-42*	..	196,400	439.9	1,777	248
1942-43*	..	182,800	409.6	1,736	236
1943-44*	..	173,100	387.8	1,669	232

*Since 1935-36 a higher allowance has been made for milk and cream consumption.

Failure to get all cows in calf by the end of December is also a frequent cause of loss of production. The normal practice with cows not in calf by the end of December is to leave them empty, milk them through the winter and on into the spring and summer, and mate them to calve again in the late autumn or winter. Cows milked through generally produce about two-thirds of their normal production. Infertility of the bull is one

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cause of failure of cows to be got in calf, and the Department of Agriculture has instituted a bull-testing service so that farmers may be advised regarding the fertility of their bulls before the mating season is too far advanced.

In addition to the foregoing causes, common dairy cow diseases reduce production. Mastitis, abortion, tuberculosis, milk fever, and grass tetany all cause herd wastage and loss of production. Data collected by the Herd-recording Council indicate that herd wastage is about 15 per cent. to 17 per cent. per annum, and that 50 per cent. of the wastage is due to disease and only 33 per cent. due to culling for low production. Research work is proceeding in all dairying countries to secure adequate methods of control, and particular attention is being paid to the control of mastitis and abortion. Vaccine control of abortion is being investigated in the Dominion, and the work carried out gives some hope that the disease may be satisfactorily controlled.

Herd Testing and Improvement

Herd testing is of considerable help in the work of improving butterfat production through better feeding and breeding: it gives the necessary background of recorded butterfat production for individual cows over a series of lactation seasons, and is of the utmost assistance in the selection of sires which have the ability to improve butterfat production.

Herd testing commenced on an organised basis in 1909 under the "association" list, in which groups of dairy company suppliers weighed and sampled their milk and had the samples tested for butterfat at the factory. Certificate of record testing for purebred cows was started in 1912 by the Department of Agriculture. Testing was expanded in 1922 when the "group" system was established, and the farmer was relieved of the work of sampling, weighing, and recording. Further developments took place with the establishment of the Dominion Group Herd Testing Federation in 1926 and the Herd Recording Council in 1936, which has done valuable service in initiating work on herd improvement and sire surveys. The number of cows under test increased rapidly up to 1929-30, when 284,000 cows were under test, but has remained fairly constant since then.

Distribution of Dairy Cows

Dairy farming is usually carried out on flat and easy rolling country and where the rainfall is 40in. and over and well distributed throughout the year. The distribution of dairy cows by land districts is shown in

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table LVI and illustrated for the North Island in Fig. 10; in considering table LVI it should be remembered that Franklin (822,000 cows) and Manukau (30,000 cows) Counties lying south of Auckland City are included in the North Auckland land district.

TABLE LVI—DISTRIBUTION OF DAIRY COWS.*

Land District.	Cows in Milk at Jan. 31, 1939.	1941.	1943.
North Auckland ..	360,967	371,269	368,982
Auckland	579,011	605,459	586,088
Gisborne	46,643	45,696	45,670
Hawke's Bay ..	58,330	57,163	54,484
Taranaki	221,349	229,420	222,390
Wellington	228,968	229,902	222,647
Marlborough ..	13,493	13,048	13,078
Nelson	31,199	31,304	30,790
Westland	12,947	12,232	12,235
Canterbury ..	68,162	64,726	63,106
Otago	42,760	39,969	37,266
Southland	60,064	58,830	58,223
	1,723,893	1,759,018	1,714,959

*Excluding boroughs.

The North Auckland and Auckland land districts have between them more than half the dairy cow population of the Dominion, and dairying in these districts has shown marked expansion during the past 20 years. This development has been due largely to the improvement of naturally low-fertility land through the use of fertiliser, lime, and improved strains of grasses and clovers. These districts still have large areas of scrub land awaiting development. The pumice lands of the central plateau, now that bush sickness can be prevented with cobalt, and the gumlands of North Auckland both offer scope for dairy farm expansion.

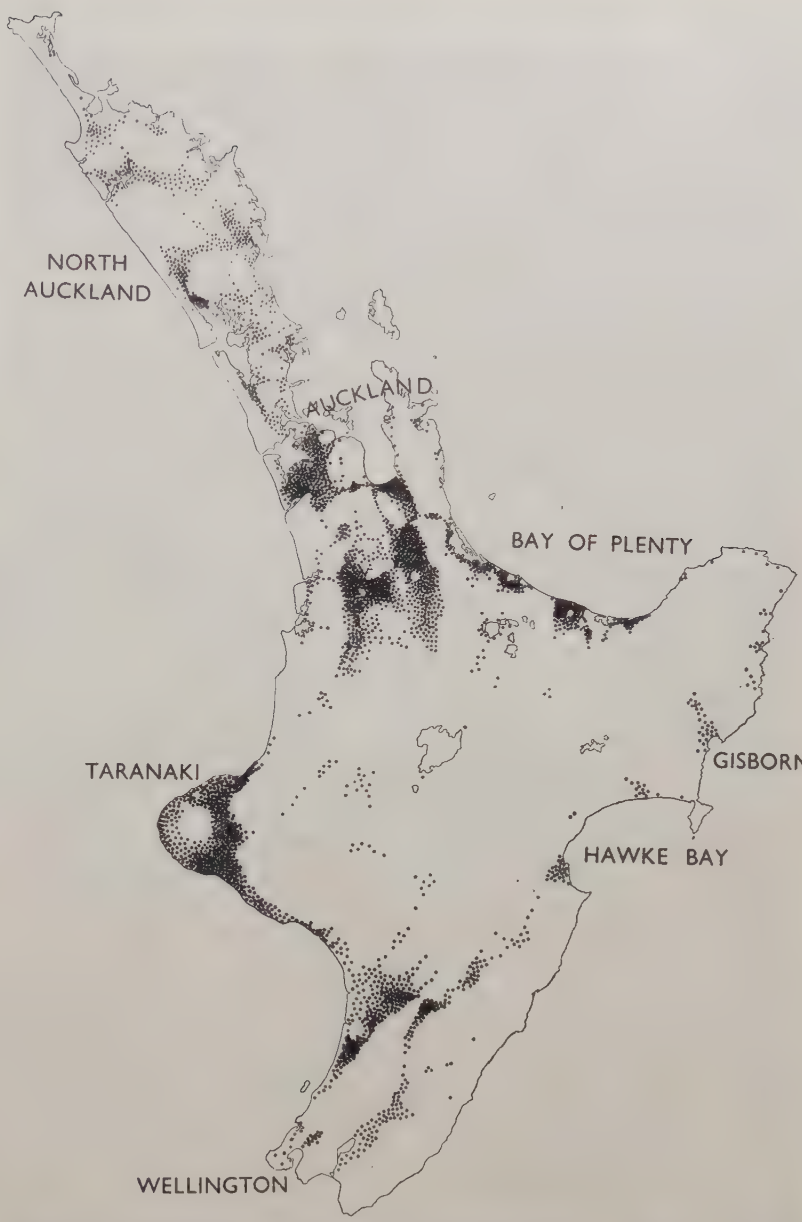


Fig. 10—Distribution of dairy cows in the North Island. Each dot represents 500 cows in 1940-41. ***(From "A Survey of the Dairy Industry in N.Z."—W. M. Hamilton, N.Z. Journ. of Sci. and Tech., Vol. XXIV—June, 1942).***

Milking Sheds and Machinery

The expansion of dairying has been greatly encouraged by the use of mechanical power and consequent economy in the use of labour. The modern milking shed and modern mechanical equipment allow of the rapid and efficient milking of the herd, and cows are milked at the rate of 10 to 13 per hour for each set of teat-cups. Sheds normally range in size from two- to six-cow plants, i.e., the number of cows which may be simultaneously milked. One man can milk and manage a herd of 25 to 30 cows, one man and a boy 50 to 60 cows, two men 80 cows, and three men 100 to 110 cows.

Just prior to and during the war the practice of non-stripping of cows has been fairly widely adopted: this enables more cows to be milked per unit of labour, but the proper management and feeding of the herd still demand the units of labour previously enumerated. In 1942 there were 31,487 milking plants capable of milking 107,096 cows simultaneously, and the number of cows in milk on holdings employing milking machines was 1,532,637, or 89 per cent. of the total cows in milk (excluding boroughs) for the Dominion.

The erection, equipment, and management of milking sheds are strictly controlled by the instructors of the Dairy Division of the Department of Agriculture. The sheds are built to plans approved by the Department, the building and equipment passed by the instructors before milking can be commenced, and the operation and maintenance of cleanliness of the shed and plant are subject to regular inspection by the farm dairy instructors.

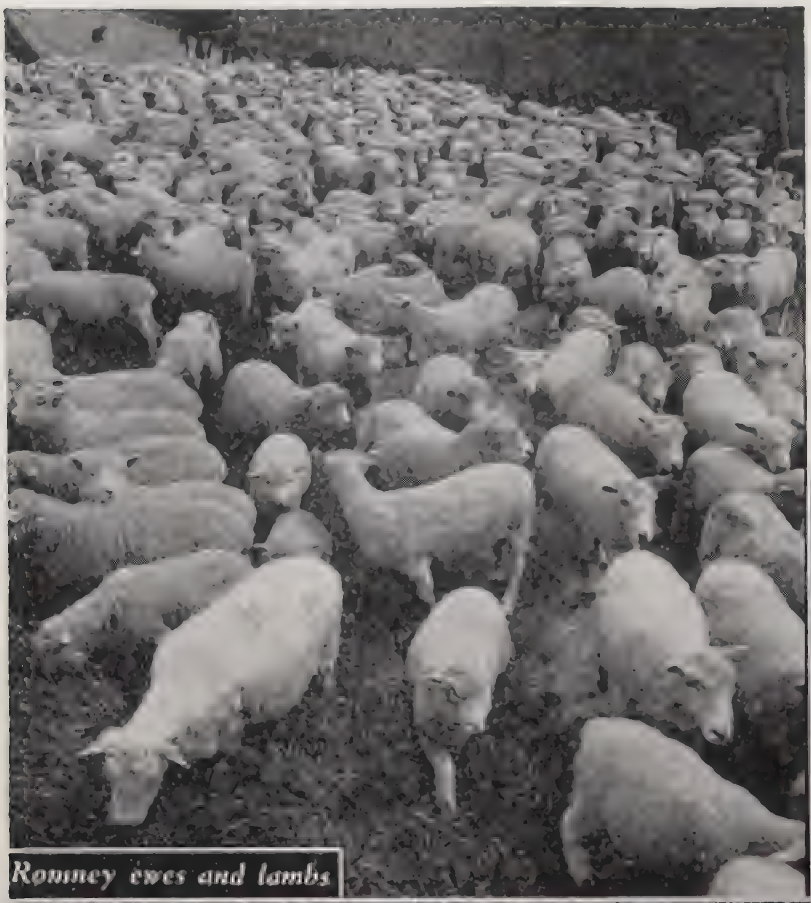
Beef Cattle

Beef cattle are maintained on sheep farms primarily as a means of pasture control, and generally early maturity is not the aim, for young cattle from 1½ to 2½ years old are used for cleaning up rank pasture growth and crushing out undesirable vegetation in the summer and autumn. A beef calf weighing about 80 or 90lb. at birth is capable of increasing in liveweight at the rate of 2lb. per day for the first 18 months of its life, and, provided good pasture was available throughout this period, it might

NORTH ISLAND PASTORAL FARMING

The Romney is the flock sheep of the North Island. The grazier on surface-sown hill country runs one to two ewes per acre, and produces wool and store and fat stock. Cull 2-tooth ewes and culled-for-age breeding ewes are sold to the intensive grazier, who pastures them at the rate of four to six ewes per acre, mates them with the Southdown ram, and produces fat lambs for export. Both the extensive and the intensive grazier run cattle as well as sheep. Herefords and Polled Angus are the common beef cattle, and they are pastured at the rate of about 1 cattle beast to every 10 sheep on hill country and one to 15 sheep on the intensively-farmed grasslands of the plains.

—*"N.Z. Farmer Weekly" photos.*



Romney ewes and lambs

Hereford cows and calves

weigh 10 to 11cwt. at 18 months and provide a suitable carcass for the chilled beef trade at that age. Under grass farming practice at its best and with winter supplementary feeding with roots and hay this weight cannot be reached until two years of age, and with poor winter feeding the cattle beast will be 2½ to 3½ years before it is fattened. There is a tendency at the present time for the hill-country farmer to rely on breeding cows to a greater extent than previously for pasture control work, and to sell the annual crop of calves in the autumn to the intensive grass farmer for fattening, but the economics of beef production do not allow of any system of special winter feeding other than the use of hay or roots to a very limited extent for the production of baby beef.

The number of cattle carried on sheep farms varies considerably, depending on the class of country and methods of pasture management, but generally the hill-country farmer runs one cattle beast for every 10 sheep, and the intensive fat lamb farmer in high-rainfall areas one cattle head to every 15 sheep. In the lower rainfall arable areas the intensive fat lamb farmer controls surplus summer growth by closing fields for seed crops, and does not usually maintain cattle for pasture control. The distribution of beef cattle in the Dominion is given in table LVII: the numbers include certain dairy cattle not enumerated elsewhere, and all dairy bulls are included with beef cattle in this table.

TABLE LVII—DISTRIBUTION OF BEEF CATTLE AT JANUARY 31, 1943.*

Land District.	Cows and Heifers two years and over.	Heifers under two years.	Steers and Bulls of all ages.‡	Total.
North Auckland	74,587	33,079	101,277	208,943
Auckland	128,493	54,293	161,896	344,682
Gisborne	126,809	56,486	89,257	272,552
Hawke's Bay	125,270	56,315	96,510	278,095
Taranaki	30,258	12,967	35,073	78,298
Wellington	194,662	84,333	233,945	512,940
Marlborough	10,100	6,024	9,843	25,967
Nelson	8,026	4,422	12,372	24,820
Westland	9,091	5,186	12,255	26,532
Canterbury	25,643	13,528	34,429	73,600
Otago	17,166	9,337	29,780	56,283
Southland	25,191	12,720	32,224	70,135
	775,296	348,690	848,861	1,972,847

*Excluding boroughs. ‡Includes dairy bulls.

Aberdeen Angus, Hereford, and Shorthorn are the common beef breeds, and in recent years the Aberdeen Angus has become the chief breed. Cross breeding is fairly common, i.e., a good Hereford bull on the poorer Aberdeen Angus cows, and vice versa, on the principle that for beef production it is better to use a bull of another breed on the more inferior cows, for if an inferior female of a breed is mated with a bull of its own breed, any inferior characters inherent in the breed or strain are likely to be accentuated. The Dominion's beef cattle are generally of good type, but the difficulty of adequate winter feeding in a farming system based almost entirely on grass is the chief drawback to the expansion of early fattening of beef cattle.

SHEEP.

The pastoral industry commenced in the fifties with the pasturing of Merino sheep on the tussock grasslands of the South Island. The development of sheep farming in the North Island and the introduction of refrigeration and the export trade in mutton and lamb involved the adoption of additional breeds of sheep. Merinos were crossed with long wools to produce the half-bred sheep, which produced a heavier fleece and a better carcass: and towards the end of last century the inbred half-bred or Corriedale was evolved to give a new breed of sheep. These half-breds and Corriedales form the flock sheep of the better tussock and foothill land of the South Island and, crossed with a long wool, generally the English or Border Leicester, give the three-quarter-bred ewe common to the arable farming districts in the drier areas of the South Island. On these three-quarter-bred ewes the mixed farmer uses the English and Border Leicester or Southdown ram for the production of fat lambs for export. Merinos or Merino crosses do not flourish in the wetter districts, and the Romney has become the predominating breed for the North Island and the wetter districts of the South Island. In the early days of farming the surface-sown country of the North Island, which was covered in freshly-burnt logs and stumps, the Romney wool tore badly on the sticks and collected a great deal of charcoal. To overcome this the Romney-Lincoln cross was evolved: the Lincoln cross produced a fleece better able to withstand these harsh conditions. The cross was maintained at a certain level of uniformity by mating each year the coarse-wooled ewes with the Romney ram and the finer-wooled ewes with the Lincoln. With the passing of the rough conditions on the hill-country farms the Lincoln cross has been abandoned, and Romney rams are used almost entirely in the maintenance of North Island flocks. For the production of fat lambs for export the culled-for-age ewes from the hill country are mated with Southdown rams by the intensive grazier: where feed conditions are suitable for fattening surplus Romney lambs are also disposed of as export lamb.

The importance of the chief breeds in the sheep industry is illustrated in table LVIII: crossbreds cover the Romney cross sheep of the wetter districts of the North and South Islands and the varying degrees of long-wooled crosses in the Corriedale and half-bred sheep in the drier districts.

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MERINO SHEEP FARMING

Merino sheep are pastured on the high mountainous tussock grasslands of the South Island at the rate of about one sheep to four acres, and wool is the chief marketable product. The upper illustration shows mustering on the rock-strewn hills of typical Merino country, and the lower illustration winter conditions in the Mackenzie Country.

—*"N.Z. Farmer Weekly" photos.*

LAMBS ON RAPE: Fodder crops figure largely in fat lamb production in the arable districts of the South Island: turnips are required for wintering the ewe flock and rape for lamb fattening. The North Island lamb fattener, however, relies almost entirely on grass.

TABLE LVIII—BREEDS OF SHEEP (1939-40).

Breed.	Stud Sheep.	Flock Sheep.	Total.
Merino	20,139	913,774	933,913
Lincoln	1,553	6,299	7,852
Romney	224,779	4,126,771	4,351,550
Border Leicester .	16,798	32,255	49,053
English Leicester	13,358	35,554	48,912
Shropshire ..	1,704	10,635	12,339
Southdown ..	133,360	219,177	352,537
Corriedale ..	45,063	1,255,017	1,300,080
Half-bred ..	—	2,176,948	2,176,948
Ryeland ..	7,960	5,342	13,302
Other breeds ..	4,521	7,499	12,820
Crossbreds ..	—	21,804,369	21,804,369
Totals ..	469,235	30,593,640	31,062,875

The stud sheep breeder is of great importance in the sheep industry, for the maintenance of quality and types in the flock sheep depends on the rams supplied by the stud breeder. In addition to supplying the Dominion's needs in stud and flock rams, the stud breeders have built up a valuable export trade in high-quality sheep. The stud sheep population from 1900 to 1940 is given in table LIX.

TABLE LIX—STUD SHEEP.*

Year.	Total Stud Sheep.
1900	328,432
1905	332,212
1910	416,432
1915	447,698
1920	287,326
1925	336,496
1930	441,474
1935	419,187
1940	469,235

*Excluding flock rams.

Flock sheep from 1900 to 1940 are enumerated in table LX. The important feature is the increase in the number of breeding ewes, which has been due largely to the progressive increase in carrying capacity and feeding value of North Island pastures. In the same period wethers and dry ewes have declined, again reflecting improved pasture conditions.

TABLE LX—FLOCK SHEEP—APRIL 30.

Year.	Rams.	Wethers.	Breeding Ewes.	Dry Ewes.	Lambs.	Total.
1900	189,945	3,528,799	9,074,799	1,079,524	5,153,696	19,026,763
1905	220,773	2,771,872	9,886,820	698,512	5,220,686	18,798,663
1910	290,501	3,167,082	12,288,193	1,194,570	6,912,842	23,853,188
1915	299,167	3,270,221	12,377,624	1,365,119	7,141,592	24,453,723
1920	293,068	3,901,742	11,415,159	1,814,391	6,208,284	23,632,644
1925	343,179	3.063,663	13,530,479	875,899	6,398,239	24,211,459
1930	434,369	3,367,916	17,319,695	1,069,788	8,208,045	30,399,813
1935	459,821	2,481,354	17,580,812	980,773	7,154,807	28,657,567
1940	528,847	2,434,586	19,465,190	959,611	7,205,406	30,593,640

Sheep farm management varies considerably, depending on the class of pasture. On the high mountainous tussock country in the South Island Merino sheep are pastured at the rate of one sheep to about four acres, and, as wool is the chief product, a fairly high proportion of wethers are carried, as these produce a heavier and better fleece than breeding ewes. On the better tussock and foothill land half-bred and Corriedale sheep are carried instead of Merinos, and the grazier produces wool and store stock. The half-bred and Corriedale ewe mated to an English or Border Leicester ram produces a three-quarter-bred ewe, which is used by the arable farmer for the production of export lamb. Fodder crops figure largely in fat lamb production in the arable districts of the South Island: turnips are required for winter feeding and rape for fat lamb fattening.

The North Island grazier on surface-sown hill country runs from one to two Romney cross ewes per acre, and produces wool and store stock on poorer country, and wool, store, and fat stock on land with fattening pastures. When the ewes are four years old and over they have difficulty in grazing hill-country pastures on account of their worn teeth, and in the late summer and autumn the grazier disposes of his normal draft of four- and five-year ewes and cull two-tooths to the intensive graziers on ploughed grassland, who mate the ewes to Southdown rams, and, after securing one or two crops of lambs, dispose of the ewes for mutton. The

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intensive grazier carries four to six ewes per acre, and in the North Island relies almost entirely on grass for feeding the flock.

Lamb is normally the major item in the Dominion's export meat. The lamb carcass varies from 30lb. to 45lb., and 10 to 11 million carcasses are exported annually.

The yearly round of sheep work commences with the culling of the flock after weaning the lambs: ewes are culled for age, wool, and conformation, and lambs drafted for replacement or disposal. All long-wooled sheep have to be dipped annually: in the North Island dipping must be done between January 1 and March 31, and in the South Island between January 1 and April 30. Mating takes place to suit the spring growth of grass: on intensive fat lamb farms in the North Island the rams go out in late February, March is the common North Island month for mating, while mating is delayed to April and May in the colder districts of the South Island. Thus lambing commences in July in the earlier districts to September and October in the coldest districts. The lambing percentage for the Dominion is about 90, and varies from about 110 per cent. on intensive grazing areas to 50 and 60 per cent. in the most extensive forms of pastoral farming. Lamb marking takes place when the lambs are two to three weeks old. Shearing of dry sheep commences in October in the North Island, followed by shearing of the wet sheep in November and December. Further opportunity for culling the flock is taken at lamb marking, when dry ewes are removed, and at shearing, when wool production is the main aim in flock management.

Distribution of Sheep

Since the early years of the present century the increase in sheep numbers has been more rapid in the North Island than in the South. In 1903 there were approximately 9½ million sheep in each island, while at present there are 18 million in the North Island and 14 million in the South. Table LXI enumerates the number of sheep in each land district at April 30.

TABLE LXI—SHEEP AT APRIL 30.

Land District.	1938.	1941.
North Auckland ..	1,170,264	1,150,838
Auckland	2,298,317	2,628,023
Gisborne	2,424,514	2,371,709
Hawke's Bay ..	4,270,800	4,265,823
Taranaki	788,396	798,963
Wellington	6,850,612	6,756,114
Marlborough	1,1 3,217	1,183,400
Nelson	461,437	464,170
Westland	90,861	86,577
Canterbury	6,147,589	5,100,459
Otago	3,978,117	3,939,371
Southland	2,724,650	3,006,213
	32,378,774	31,751,660

The development of additional pasture land for the expansion of the sheep industry is most likely to occur in the North Auckland and Auckland land districts, where there are still large areas of undeveloped ploughable scrub land which are likely to be grassed as soon as labour and fertilisers are again freely available.

Labour and Equipment

The permanent labour requirements for sheep farming are about one man for each 750 to 1,000 ewes, but in the more extensive forms of pastoral farming this number is exceeded. Table LXII shows the number and size of flocks in each island.

TABLE LXII—NUMBER AND SIZE OF FLOCKS AS AT APRIL 30, 1941.

Size of Flock.	Number of Flocks. N. Island.	S. Island.	Total.
1-200 ..	3,275	4,525	7,800
201-500 ..	3,359	4,376	7,735
501-1,000 ..	3,479	3,938	7,417
1,001-2,500 ..	3,781	3,114	6,895
2,501-5,000 ..	1,197	656	1,853
5,001-7,500 ..	292	138	430
7,501-10,000 ..	99	51	150
10,001-20,000 ..	90	42	132
20,001 and over .	10	11	21
	15,582	16,851	32,433

The smaller flocks are maintained on dairy and mixed farms: many dairy farms are larger than necessary for one milking shed, but may not be suitable for two milking units, and breeding ewes may be run on land not suitable for dairying, or may be managed over the same pasture land as the dairy cows. Small flocks are also maintained on arable mixed farms, and with the increasing demand for grass and clover seeds there has been some tendency to reduce the number of sheep on such farms, with a consequent reduction in the area of supplementary fodder crops required.

The large-scale management of sheep has necessitated the adoption of labour saving and has developed the mounted shepherd, shearing machines, and well-planned shearing sheds, drafting yards, and dips. In 1942 there were 11,555 shearing machine plants having 28,611 individual stands.

PIGS.

Pig keeping is confined almost entirely to dairy farms, and pigs are used to convert separated milk, buttermilk, and whey into marketable products. Contrary to the practice in most other pig meat producing countries separated milk and whey are not used to supplement a grain ration; in the Dominion these dairy by-products form the main ration, and grains and meals are used in any quantity only during periods when there is no separated milk or to make up the protein deficiency of whey. In recent years there has been some progress in utilising roots (supplemented with meat meal) to provide winter feed, so that a breeding programme may be arranged which will allow the provision of sufficient pigs to utilise all the separated milk or whey available in the flush of the season. The future expansion of the pig industry

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PIG INDUSTRY: Pig keeping is confined almost entirely to dairy farms, and pigs are used to convert separated milk, buttermilk, and whey into marketable products. The main breeds kept are the Berkshire, Tamworth, Large Black, and Large White. Pigs are raised and fattened in small grassed yards, while the dry sows are run out in larger fields used also for the grazing of other livestock.

will depend very largely on the use of roots (and in the warmer districts of maize) to provide supplementary feed during periods of milk shortage.

A general view of the pig industry is given in table LXIII, which shows the number of breeding sows and total pigs at January 31 from 1939 to 1944.

TABLE LXIII—PIG INDUSTRY.*

	Pigs at January 31.	
	Sows.	Total Pigs.
1939	96,024	675,802
1940	92,029	706,340
1941	99,648	761,519
1942	90,608	681,016
1943	82,023	604,574
1944	77,281	573,362

*Excluding boroughs.

There is considerable variation in the practice of pig management, but with efficient management one sow is kept for each 10 cows, and about 40lb. of pig meat is produced for each 100lb. of butterfat. Sows are mated to farrow in May, June, and July, and again in November, December, and January. After weaning a litter the sows are run out on grass pastures and should receive supplementary feed (either grain or separated milk) for the first six weeks after service to enable them to regain condition after rearing a litter: this feeding is essential for the production of large and regular litters. Apart from the grazing of dry sows on to general farm pastures, the remainder of the pig feeding activities are usually conducted in small grassed yards with wooden shelters for the pigs—either moveable with wooden floors or fixed with concrete floors and feeding yards. Litters are pushed forward with a small supplementary meal allowance fed in a creep, while the sow is given as much separated milk as she will consume. With the spring litter the pigs are pushed forward on a full separated milk diet and disposed of as porkers at between 90 and 170lb. liveweight, or baconers at between 170lb. and 240lb. liveweight. The second litter may also be disposed of as pork, but with late littering many of the pigs will not be finished before separated milk supplies decline, and they are carried over the winter in store condition and fattened for bacon in the spring. It is in the wintering of these store pigs that farm-grown roots are so useful, and winter stores are usually allowed 1lb. of meat meal per day and as many roots as they will clean up. An efficient pig keeper will provide half an acre of roots or more for each sow kept. Roots vary in palatability: sugar beet and carrots can form 30 to 40 per cent. of the fattening ration, but swedes are suitable only for store feeding.

The main breeds kept are the Berkshire, Tamworth, Large Black (Devon), and Large White. Although the Large White is very important in most bacon-producing countries, it requires good living conditions, and accordingly suffers when the housing and feeding conditions are not of the best. The Berkshire is the predominating breed in the Dominion, and the cross with the Tamworth produces a suitable pig for bacon production.

Pig meat production could be considerably increased in the Dominion, for the really efficient farmer is producing about twice the Dominion average of pig meat per cow. The wider adoption of the practice of farm-produced fodders to supplement milk by-products is the first essential in an expansion programme.

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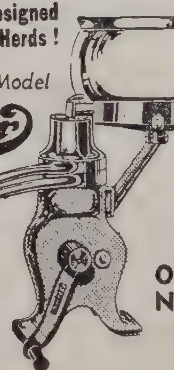

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MEAT, WOOL, AND DAIRY PRODUCE.

The annual production of meat is about half a million tons, of wool 150,000 tons, and of dairy produce 250,000 tons. The gross meat production during recent seasons is given in table LIX, which indicates the expansion which has taken place in recent years.

TABLE LXIV—GROSS MEAT PRODUCTION.†

Class of Meat.	Av. of years 1936-37, 1937-38, and 1938-39.* (Tons.)	Season 1942-43.‡ (Tons.)	Season 1943-44.‡ (Tons.)
Beef ..	140,000	172,000	148,000
Mutton ..	100,000	115,000	120,000
Lamb ..	146,000	173,000	166,000
Pig meat§ ..	47,000	41,000	41,000
Veal¶ ..	23,000	20,000	18,000
Offal ..	14,000	16,000	15,000
Total ..	470,000	537,000	508,000

† Weight of dressed carcass meat, exclusive of condemnations.

*Twelve months ended June 30.

‡Twelve months ended September 30.

§Inclusive of bacon at dressed carcass weight equivalent.

¶Comprised of veal and bobby veal at dressed carcass weight equivalent.

Wool production is given in table LX, and butter and cheese production in table LXI. Dairy production has shown a decline since the 1940-41 season, due largely to fertiliser and labour shortages caused by the war, but efforts are being made to stimulate dairy production again.

TABLE LXV—WOOL PRODUCTION*

Season.	Tons.
Av. of 3 seasons 1936-37, 1937-38, and 1938-39 ..	138,000
1939-40	138,000
1940-41	148,000
1941-42	154,000
1942-43	152,000
1943-44	147,000

*For years ended June 30. Includes clip wool, slipe wool, pie wool, and wool on woolly sheep-skins exported. All wool is given on a greasy basis, or greasy equivalent.

The Dominion's farm and general economy is based on the production and export of a few commodities, of which meat, wool, and dairy produce are the most important. The farm and factory production of these commodities is very efficient, and, given an expanding market, further development of the livestock industries along traditional lines will occur in the post-war years.

TABLE LXVI—PRODUCTION OF BUTTER AND CHEESE.

Season.	Creamery Butter.‡ (Tons).	Factory Cheese.* (Tons).
1937-38	159,600	88,400
1938-39	144,700	85,100
1939-40	155,700	97,800
1940-41	161,900	122,400
1941-42	129,000	157,400
1942-43	138,700	101,700
1943-44	134,400	91,700

‡Excludes farm and whey butter, amounting to between 5,000 and 6,000 tons per annum.

*Cheddar cheese only, and excludes process cheese: weights are factory weights and sale weights approximately 2 per cent. less due to shrinkage.

The efficiency of the Dominion's livestock industries is due to the excellence of the pasture lands: no expensive concentrates have to be fed to milking or fattening animals, and the mild climate allows of all-the-year-round grazing. In no other country in the world can such a satisfactory living be secured from grass farming, for 50 to 100 acres of good permanent grass gives an economical dairy farm, while 150 to 200 acres provides a fattening farm.

Unless stated otherwise the tables in this article are compiled from the A. and P. Statistics or from data collected by the Department of Agriculture.

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Ryegrass Seed

Pre-harvest Examination for Blind-seed Disease and Estimation of Germinating Capacity

By
E. O. C. HYDE,
Seed Analyst,
Seed-testing Station, Palmerston North.

THE records of the Seed-testing Station indicate the quality of seed harvested over a period of 25 years. The earliest records show that ryegrass seed was unreliable as regards germination, and that there recurred seasons in which many crops were of extremely low germinating capacity.

THE cause of this trouble was unsuspected until 1932, when it was discovered that in samples of ryegrass seed of low germination the dead seeds carried a fungus, which produced characteristic slimy spores. Subsequent research proved that the blind-seed fungus killed the seed, and was the most general cause of low germination in ryegrass crops.

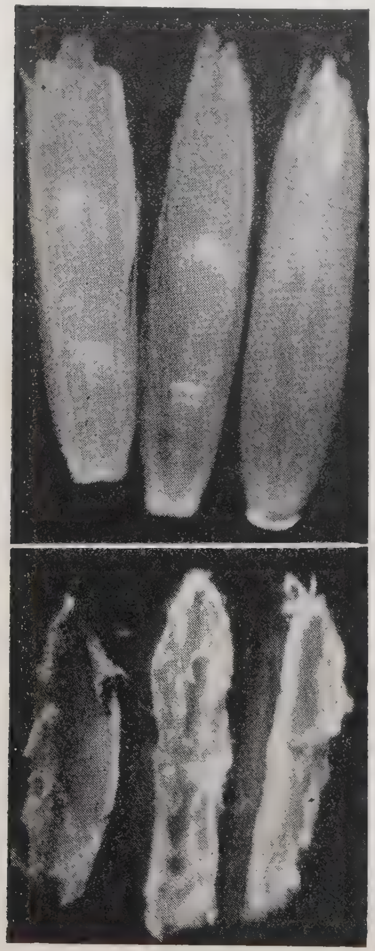
In the "Journal of Agriculture" of May, 1932, it was pointed out that the diseased seeds could be recognised by their appearance, and that the potential germinating capacity could be estimated before the seed was harvested. It was suggested that a fore-knowledge of the germinating capacity would enable growers to avoid the waste of labour involved in harvesting unprofitable crops of low germination.

Every year since 1932 ryegrass seed crops have been examined to ascertain the extent of the damage caused by the blind-seed disease. The usefulness of the service has become widely recognised, and this season over 1,500 samples were submitted for examination.

Life History of Blind-seed Fungus

The blind-seed fungus attacks the seed only. It grows through the tissue of the seed obtaining nourishment, and, except when its progress is arrested by the ripening of the seed, it kills the embryo.

The fungus remains dormant throughout the winter in diseased seeds which have fallen to the ground. In the following summer it again becomes active, and, growing out from the seed, forms one or occasionally several apothecia. In early December these may be found in large numbers where diseased seed was shed the previous season. They are small, saucer-shaped bodies, no larger than the end of a pencil, and raised to just above ground level on a slender stalk. From the upper surface of the apothecium spores are ejected into the air. It is these wind-borne spores which introduce the disease into seed crops. The initial infection takes place mainly while the grass is still flowering.



Above—Three diseased seeds. Until the paleae or husks are removed the diseased seeds cannot readily be detected. Below—The same seeds with paleae removed. The seeds are covered with dried spore slime.

A spore falling upon the soft immature seed puts out a germ tube, which enters the seed and continues to grow and branch. The fungus then grows out upon the surface of the seed and produces there a vast number of slimy spores very different from the air-borne spores responsible for the initial infection.

The slimy spores form a mass of honey-like consistency lying between the seed and its enveloping paleae or husks. By inoculating seeds artificially it has been ascertained that about seven days elapse from the time of infection until conspicuous masses of slimy spores are formed on the seed.

Under dry conditions the slimy spores do no harm, but when rain wets the grass they are washed about and may infect other seeds in the same or adjacent seed heads. In this way the disease spreads within the crop. Wet weather promotes the spread of the disease by providing the medium for the distribution of the slimy spores, and conditions favourable for their germination. Persistent wet weather also delays the ripening of the seed and so prolongs the period during which it is susceptible to attack.

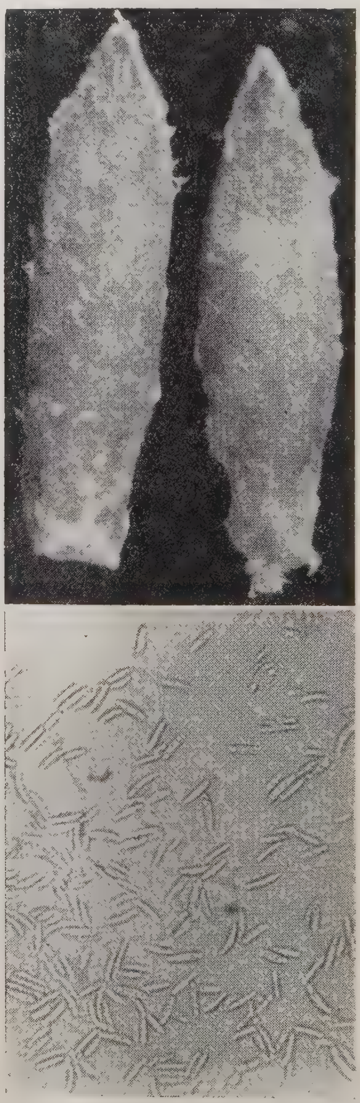
Recognition of Disease

The blind-seed disease is difficult to detect in the field. In the laboratory it can be recognised by three means. The method most generally used is to remove the paleae and examine the seed under a dissecting microscope, enlarging it to about 20 times its natural dimensions. A most reliable but slower method, used only in doubtful cases, is to remove the paleae, immerse the seed in a drop of water, and, with high magnification, examine it for the presence of the characteristic slimy spores. The easiest, but least reliable, method is to examine the seed over a diaphanoscope. The diseased seeds are mostly opaque, and have a dark appearance when viewed by transmitted light.

The appearance of the diseased seeds varies according to the degree of ripeness of the seed at the time of examination, and the stage of development the seed had reached when it was attacked by the disease. Seeds infected at flowering time, if they develop at all, are small and shrunken. There is an abundant production of slimy spores. These are usually washed away by rain or dew before the crop ripens, but if they remain in quantity on the dried seed, they form a mass of hard wax-like consistency.

When the seed is infected during the early or middle stages of its development large quantities of slimy spores are produced, but the shape of the seed is more normal. As the crop ripens these seeds are distinguishable by the dried remnants of the spore slime, by the dull appearance of the surface of the seed, by the colour, which is reddish-brown or mottled brown and yellow, and by the atrophy of the embryo.

When seeds are infected at a late stage of development the production of slimy spores is not abundant, and is often confined to only part of the surface of the seed. It is common to find the spores produced mainly in the region of the hilum or seed scar. As these seeds ripen at least part of the surface takes on a dull brown colour or becomes slightly mottled. The embryo is of normal size, and some of these seeds are capable of germinating. If the seed has been



Above—Diseased seed covered with spore slime. Below—Some of the slimy water-borne spores highly magnified.

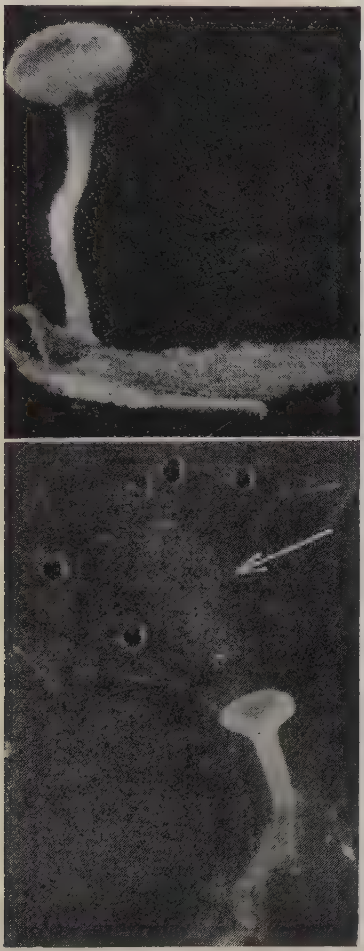
DELIVERY OF PHOSPHATIC FERTILISERS

In the January issue the attention of farmers was drawn to the fact that their topdressing allocation of phosphatic fertilisers applied only in respect of the twelve-month period ending December, 1945. This date was incorrectly given, the actual final date of the twelve-month period being June, 1945.

TABLE I—Average germination of certified perennial ryegrass seed from the main seed-producing districts for the past 14 years.

District of Origin:	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Poverty Bay ..		91	96	95	93	88	81	86	93	80	91	91	91	79
Hawke's Bay ..	91	96	97	94	96	94	92	91	78	70	90	92	92	95
Manawatu ..		65	81	88	94	92	56	83	56	59	91	75	62	92
Nth. Canterbury .			91	88	94	92	53	80	60	75	98	92	74	93
Mid-Canterbury ..	93	51	92	83	93	94	51	74	46	86	86	92	73	89
Sth. Canterbury .			81	64	86	87	54	72	49	91	90	79	58	84
Nth. Otago ..			76	66	94	90	85	89	53	87	87	81	64	78
Central Otago ..		34	97	95	96	95	88	91	67	78	93	75	80	83
South Otago ..	27		84	88	95	95	79	80	68	76	91	96	75	84
Southland ..		46	56	53	86	90	39	75	34	49	79	62	71	76

killed, the tissue of the embryo may show a brownish discoloration. The infected seeds can be most readily distinguished if they are first soaked in water. They then show distinct red spots in the pericarp or seed coat.



Above—In early summer the blind-seed fungus which has been dormant throughout the winter again becomes active and grows out to form an apothecium. Below—From the upper surface of the apothecium wind-borne spores are ejected. Note the cloudy mass of ejected spores germinating on nutrient jelly.

Sampling of Crops

To ascertain the extent to which a crop has been damaged by the blind-seed disease it is of the utmost importance that the sample taken should be representative of the whole crop; it must be made up of seed heads from a large number of points scattered throughout the field. The procedure recommended is to walk to and fro across the field in such a way that the whole area is covered evenly, at the same time stopping every few paces to pick up one seed head at random. A small sheaf, composed of about three hundred seed heads, should be collected in this way. The sheaf should be tied and labelled, and superfluous straw trimmed off. To ensure that the sample arrives in a fresh condition it should be wrapped tightly in several layers of paper and dispatched by the earliest mail. Growers are advised to submit one sample two to three weeks after flowering, when the seed is at the middle to late stage of development, and another when the seed is mature. The second sample may be taken just before cutting or after cutting while the seed is drying in the swath.

Examination of Samples

Samples which cannot be examined immediately upon receipt are placed in a refrigerator. With immature samples one seed is selected at random in each seed head and examined under a dissecting microscope. The paleae or husks are removed with forceps and needle, and the seed exposed. A record of the condition of the seed, whether sound or diseased, is made. Usually 200 seeds are examined in this way, but if the proportion of diseased seeds is found to be extremely low, only 100 are examined. With the mature samples the main purpose of the examination is to estimate the germinating capacity of the seed when dressed. Small, light seeds, which will obviously be removed in machine-cleaning, are therefore excluded from the record. Very lightly infected seeds in which the embryo appears healthy are recorded as sound seed, because, if dried without much delay, they are sometimes capable of germinating. When there is a large proportion of seeds in this condition the crop is liable to deteriorate rapidly under wet conditions, and the grower is advised

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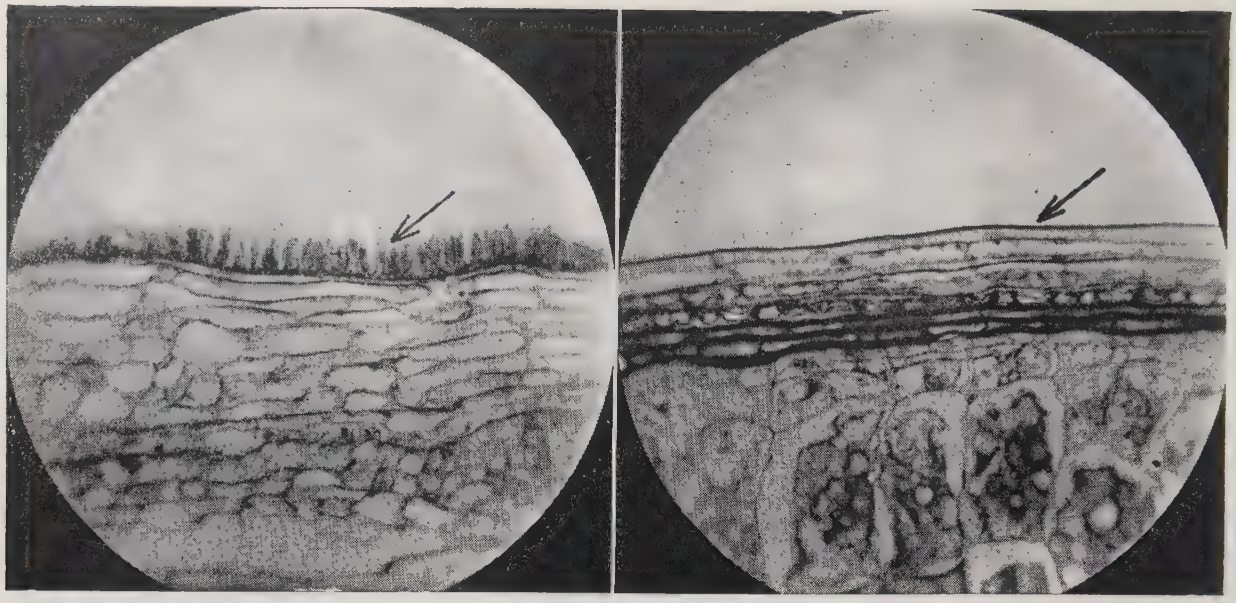
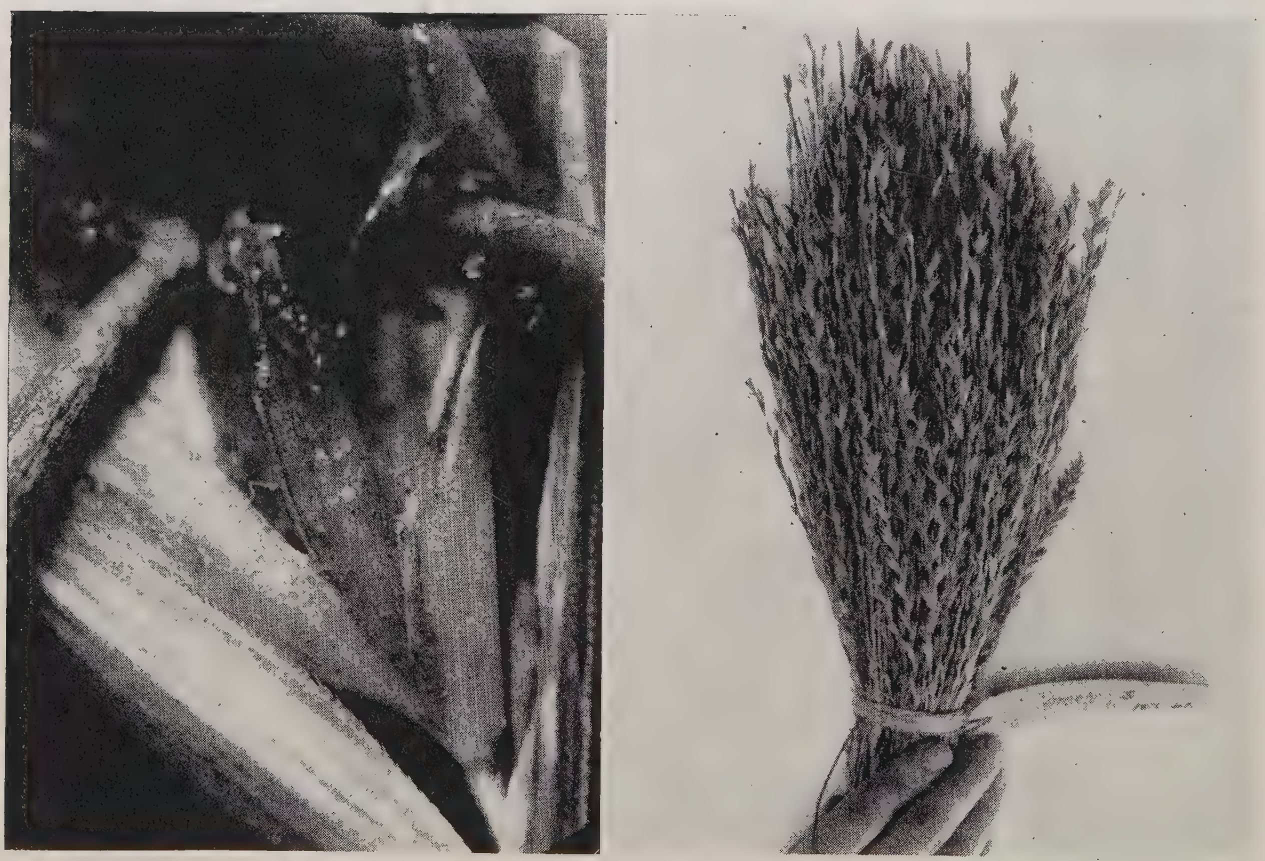
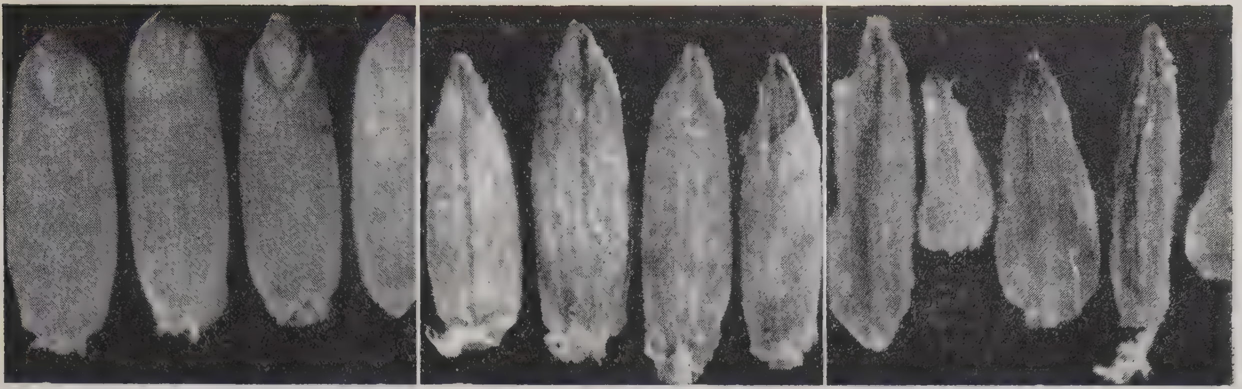


The blind-seed fungus attacks and enters a seed, later growing out upon the surface, where it produces great numbers of slimy spores. Left—A highly-magnified section of a diseased seed, showing the production of slimy spores on the surface. Right—A section of a healthy seed showing the smooth, clean skin.



Left—The paleae are drawn away with forceps and needle and the seed examined. Right—A sample for examination should consist of about 300 seed heads taken from scattered points through the field. The sample should be trimmed and labelled, and dispatched promptly, so that it will arrive in fresh condition.



Ryegrass seeds magnified to twelve times their natural dimensions. Left—Healthy seeds. Middle—Seeds infected with the blind-seed disease at the early to middle stages of development. Note the dull mottled surface, with traces of dried spore slime. Right—Seeds infected at about the flowering stage. They produce slime spores abundantly, but when these are washed away by rain the seeds are of light weight and can be eliminated by the cleaning machines.

to submit a further sample before threshing. When handling mature "rubbed out" samples the seed is first soaked in water. Seeds are then taken at random for examination, the diseased seeds being identified by the presence of red spots or flecks in the seed coat.

TABLE II—Percentage of seeds infected with the blind-seed disease in 930 samples of ryegrass seed examined during January, 1945.

Diseased Seeds. %age.	No. of Samples.	Samples. %age.
0-10	281	30
11-20	154	16
21-30	136	15
31-40	163	18
41-50	104	11
51-60	55	6
61-70	22	2
71-80	9	1
81-90	6	1
91-100	0	0

TABLE III—Percentage of seed infected with the blind-seed disease, the estimated germinating capacity, and the results of germination tests in 20 samples of ripe seed taken at random.

Seeds infected with the blind-seed disease.	Estimated germinating capacity.	Germinating capacity determined by germination tests.
Per cent.	Per cent.	Per cent.
2	98	95
34	66	63
54	46	45
19	81	84
81	19	16
72	28	32
41	59	51
8	92	91
41	59	67
0	100	93
68	32	30
34	66	50
7	93	92
28	72	66
5	95	94
64	36	43
3	97	92
77	23	18
36	64	60
34	66	52

The examination of samples sometimes discloses other facts, a knowledge of which may be of use or interest to the grower. Such information as the failure of a great proportion of the flowers to set seed, evidence of frost injury, the presence of an excessive amount of ergot, or a considerable proportion of sprouted seeds is included in the reports to the growers. In some instances it is found that a large proportion of the diseased seeds lie very loosely within the paleae and are likely to be "shelled" and removed during machine-cleaning. This observation is always mentioned in the report.

What Results Indicate

It is important to appreciate the fact that the damage caused by the disease may continue to increase up to the time the seed finally dries out, and that it is possible to ascertain the extent of the damage at the time of examination only.

If the sample is immature, only a progress report can be given. There is no finality about such a report, unless the crop is shown to be already seriously damaged.

Reports on immature samples give the proportion of seeds infected up to the time of examination, an indication of the stage of development of the seed, and recommendations concerning subsequent sampling. Only in cases of heavy early infection can an estimate of the ultimate germinating capacity be based on the examination of immature seed. In these cases a statement such as "Probable germination under 30 per cent," is made in the report.

In reports on samples of mature seed an estimate of the germin-

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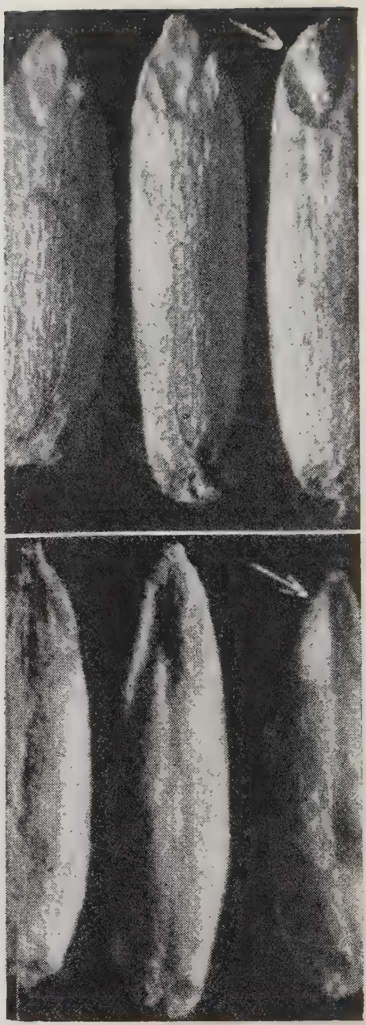
ating capacity is given. These estimates are reliable within reasonable limits, provided the cutting and ripening of the seed proceeds without much delay. If an infected crop is exposed during the harvesting period to prolonged wet weather, and the drying out of the seed is delayed, the estimate of the germinating capacity may require revision.

It is a well-established fact that the blind-seed disease is by far the most general cause of low germination in ryegrass seed, but there are other factors which sometimes contribute to the loss of vitality. The sprouting of seeds before harvesting, mechanical injury in threshing, and excessive heating of seed of high moisture content may all be the cause of the death of a proportion of the seeds, particularly in a wet season. Where such factors operate the germinating capacity is reduced below the estimate based only on the damage caused by the blind-seed disease.

Uses of Information

The principal value of the reports lies in the fact that they enable growers to avoid the financial loss and the waste of effort entailed in harvesting crops which are practically worthless on account of extremely low germination. The information enables a grower to estimate the value of his seed crops and adjust his harvesting programme accordingly. Often a grower shuts up several fields for seed. It is useful to know which crops are of greatest value, for they may then be handled when conditions are most favourable. The reports assist farmers to decide whether it is more profitable to thresh seed or to convert the crop into hay. Often a grower has the alternative of cutting early for ryegrass or later for white clover seed. The better course is more easily decided upon when the probable germination of the ryegrass seed is known.

The experience gained during the past 12 years has made possible many improvements in the method of examining ryegrass seed for blind-seed disease. There is no doubt that further development of the technique is possible, and an appeal is therefore made to seed-growers who may be interested in the matter to assist by reporting to the Seed-testing Station the subsequent history of crops from which samples were submitted for examination.



Seeds infected during the early to middle stages of development grow to almost normal size and weight, but the embryo fails to develop fully. Above—Healthy seeds with fully-developed embryos. Below—Diseased seeds with atrophied embryos.

Seeds infected at a late stage of development are of normal size, and the embryo may be fully developed. In the ripened samples these seeds can be detected by soaking and removing the paleae. They can then be distinguished by the presence of red spots in the skin of the seed.

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WHEAT TARGET CORRECTIONS.

In the wheat acreage targets on page 256 two districts were incorrectly printed in some copies of this issue. The seventh district in some cases appears as Northland, and should read North Canterbury, 89,000 acres; and the ninth district, appearing as Southland in some copies, should be South Canterbury, 54,000 acres.

FAT LAMB FARMING

SUCCESSFUL farming today is very much a business undertaking that needs to be managed skilfully and planned scientifically. It is not enough to be willing to work long hours without expecting to make a fortune. This article discusses the practical financial angles of fat lamb farming on the North Island grasslands from the point of view of a man with little experience who proposes to go on the land.

By
A. T. SHANNON,
Field Economist, Hamilton.

AT the present time there is a prospect of many men returning from overseas, who, though wholly untried or only partly experienced in farming, propose going on to the land. The problem has arisen of how best to fit them quickly for running farms of their own so that there will be a minimum of unpleasant shocks and disappointments.

Many men who, through their Army experience, have developed a liking for the open air and a distaste for their former indoor occupations, plan to work on farms for a year or two to gather experience and test ideas before launching out on their own to gratify the desire for the freedom of farm life.

A sound apprenticeship is obviously essential. To become a successful farmer a man must discover whether he has a genuine liking for that way of life, the capacity for lengthy hours of toil, and an aptitude for stock work. Most important, he must discover whether he has any sort of "stock sense," for this is the essence of successful farming and is an inborn gift, in the same way that mechanical mindedness exists or is absent but is an absolutely necessary requisite for a prospective engineer.

No man can expect to become proficient in animal husbandry without adequate training any more than a journeyman carpenter can do without his years of apprenticeship. But apprenticeship alone does not prepare a carpenter to become a building contractor, and farm work alone will not prepare a man for farm management and ownership, because it does not provide the very necessary financial experience.

Financial Side

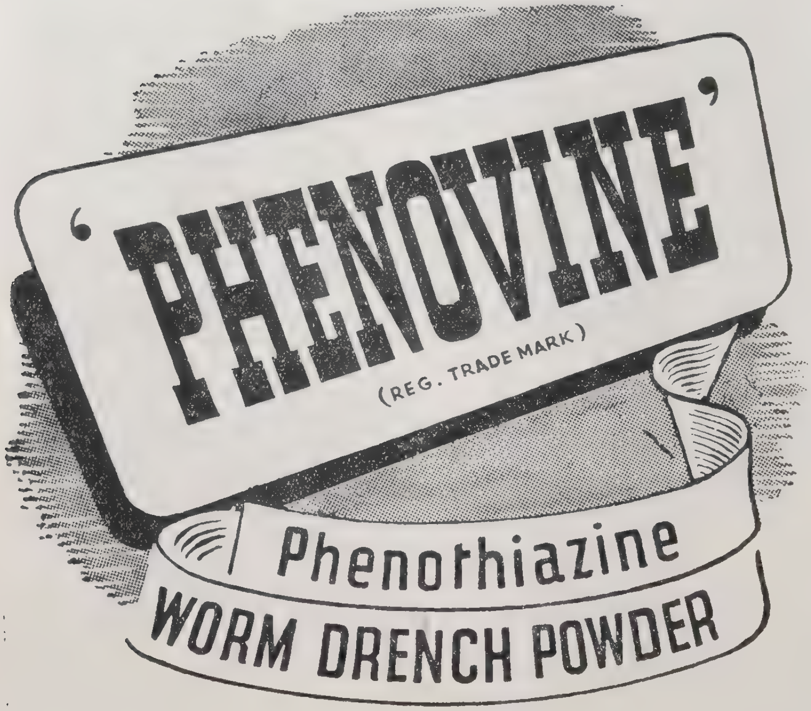
Established farmers, brought up on the land, have acquired their knowledge and judgment of prices and finance to a large extent unconsciously through their years of experience, and, in common with other business men, do not readily discuss the very matters that a beginner must know. Probably quite as many farming failures are due to over-optimistic or otherwise faulty financial judgment as to poor husbandry. Therefore, while a farmer of long experience may well rely on his tried judgment and farming sense, a novice must get down to testing all aspects of farming in terms of figures as well as facts, and he must very largely educate himself into the financial side of the undertaking. If he came from an office in town, he would hesitate to take up a £10,000 enterprise if he knew little more about buying and selling and business administration than an office junior. By the same token he has to know more about the running of a £10,000 farm than how to dock lambs or clean ditches.

It has been found that the budget system of costs and returns is of considerable value, particularly when substantial borrowing is necessary, and it is practically indispensable during the battling or establishment period of about six years, which requires considerable mental and physical stamina in addition to careful planning. The lending authority will almost certainly impose a financial budget which itself becomes a helpful management guide for the young farmer.

This article is written concerning the financial angles of a fat lamb farm, and is presented in broad outline, which certainly must be adapted to individual cases. Of course, no article can replace the sympathetic advice—"fathering," perhaps—of a successful farmer who willingly interests himself in the welfare of a struggling newcomer, and one cannot be too strongly advised to enlist such valuable aid. There are no hard-and-fast rules of management as may appear here; simplification is only for ease of understanding. The purpose of this article is to illustrate the practical financial considerations facing a typical farmer running 1000 ewes and 100 run cattle on a fully-developed Waikato fat lamb farm, comprising easy rolling sheep country capable of carrying round about 3 to 4 ewes to the acre and getting all the lambs away fat.

Size of Flock

At the present time a unit of this size is favoured, because it is as much as a busy man can handle with a limited amount of casual labour. Investigation and experience have fully demonstrated that without cheap or unpaid family labour a small farm is normally a difficult and less remunerative proposition for labour and capital. In the case of a fat lamb farm there is some agreement that a unit of under 700 ewes is beginning to grade into the small-farm size, with attendant drawbacks. A man with limited capital may desire to make a success of a small place so that he can build up enough funds to move on to a larger farm, but this move usually does not eventuate. These points should be clearly in mind in proposing to take up farming.



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Polled Angus cows and calves on a fat lamb farm.

The thing to remember is that net returns per ewe get smaller with the size of the flock. Moreover, a small farm is harder hit by the common farming reverses, and recovery is particularly difficult as compared with a larger and more economic unit. In addition, average family responsibilities make it almost impossible to build up a reserve fund.

A common flock size in the Waikato is between 300 to 500 ewes, but this usually occurs in conjunction with dairying with, say, 30 or more cows, or where dairy heifers are raised for sale. This has disadvantages, but returns come in more regularly, and the total capital outlay on a one-man unit is reduced by upwards of £1000 to £2000. Where sheep alone are run it is typical to find a farm owner handling some 850 ewes on his own, and after that the labour requirements are one adult hand to every 600 ewes, though of course these figures are subject to wide variations.

It should be clearly understood that no attempt is made here to lay down or criticise any official standards, or to set out the position from an accountant's point of view, but rather to examine the question from the outlook of a prospective farmer. The information here is not only the views of the writer, but represents opinions of farmers and agencies concerned with farm production, and their valuable co-operation is gratefully acknowledged.

OUTLAY ON A 1,000-EWE, 100-RUN CATTLE PROPERTY.

With wide differences in the extent and value of buildings on a property, the best that can be done is to take a possible case and analyse the capital costs. In the past it has been common as a rough guide to reckon the valuation of a developed farm with fences, drainage, water supply, farm buildings, and homestead at about £7 10s. per ewe, subject to variations according to the state of the property and the demand for farms. Recently-advertised Waikato farm properties show per ewe valuations mostly between £5 and £9, the higher values being associated with low to medium acreage of high carrying capacity per acre. Unquestionably close proximity to main towns and principal highways increases farm prices above strictly economic values. However, a justifiable reason for the higher values on the more level areas is that the land can be machine handled, particularly for topdressing, as against being man-handled at considerable cost and inconvenience. Within limits, better propositions are to be found away from nearby areas.

Representing present-day land sales for the type of farm under consideration, with buildings reasonably modern and in good state of repair, one finds typical values such as these:—

	£	Per ewe. £
5-roomed house with outbuildings	1300	
Woolshed, say 50ft x 30ft.	400	2
Implement sheds, etc.	300	
Improved land with water supply	6000	6
	£8000	£8

These figures are set down in the full knowledge of their limitations and the substantial range of values. One difficulty in expressing values on a per ewe basis is that on any particular farm there may be a considerable variation of stock numbers from year to year, depending on seasonal conditions, market prices, the management policy, the type of country, and the condition of the pastures. It has been stated, too, that in addition to the quality of the land, the ease of working the soil must be taken into account in assessing values, as affording wider scope for skilled management. It should also be remembered that the advertising of farms for sale and the technique of salesmanship present a picture of what may be achieved under favourable circumstances, and values are expressed accordingly. Farm purchasing should be definitely left to skilled hands having an intimate knowledge of values and properties in the district.

The market prices of breeding stock have varied widely in recent years. In 1942 the price of 2-tooth ewes was about 26s. 6d., which is considered reasonable in making long-term plans. Judging by the sales of the early part of this season, the average run of prices appears to be around 32s. for

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medium 2-tooths, with the best at about 35s. Actually the prices of fat lambs, cull ewes, and wool together in one season are the basis of ewe prices in the following season, though ewe values fall proportionately lower in bad times and rise proportionately higher in good times, as compared with fat lambs and wool. By the time purchased ewes subsequently lamb their cost will often be found to be out of sympathy with the actual returns, and there is little the farmer can do about it then.

An indication of what it would cost to stock a farm in recent times is afforded by the two following examples:—

A.

	£
300 2-tooth ewes at 32s.	480
700 older ewes at 26s.	910
30 rams at £6	180
60 breeding cows at £8	480
40 2-year store steers at £9	360
2 bulls at £20	40
4 horses at £25	100
1 house cow at £10	10
	£2560

B.

	£
400 5-year ewes at 25s	500
400 6-year ewes at 22s 6d	450
200 aged ewes at 20s	200
30 rams at £6	180
100 store run cattle at £8 10s.	850
4 horses at £25	100
1 house cow at £10	10
	£2290

In other words, on present-day prices it costs about £2 5s. per ewe carried to stock a fat lamb farm. A few years ago, under more "normal" conditions, 35s per ewe would have been considered high.

Financing stock purchases is the particular interest of stock firms, who customarily advance about 50 per cent. of the purchase value of stock, but the percentage advanced may be above or below this proportion, depending on the soundness of the client, market values, and seasonal prospects. For stock purchases outlined above it would be necessary for the intending farmer to provide at least £1000 of the total purchase price.

Such a stock mortgage involves interest calculated on a day-to-day balance, and charged six-monthly. It may run into an annual charge of about £75. One type of loan, available to rehabilitated ex-servicemen, covers land and stock together on a long-term table mortgage, and, considering the very serious upsets that have arisen in difficult times from the burden of short-term stock loans, this has much to recommend it.

Suggesting a capital outlay on plant and implements presents difficulties, because if cultivation is proposed as part of farm policy, the choice may be between having it done by a contractor, and so increasing current expenditure, or purchasing the necessary implements, and thus increasing the capital outlay. Assuming that the implements are typical of what one might pick up at a seasonal clearing sale in June-July, the possible cost over recent seasons is estimated below, allowing that the figures are on the low side on today's basis of reckoning.

The possible cost over recent seasons is estimated at £300 for the following implements essential for pasture management and general farm equipment:—

£

Topdresser
Mower
Hayrake
Dray
Harness and trees
Harrows
Tools
Shearing-shed equipment

If annual crop production is to be undertaken, an additional outlay of about £125 would be required for a plough, discs, drill, and roller.

Consideration will be given later to the purchase of a tractor, but at least some sort of car is almost essential, preferably with a trailer, and the outlay would be at least £250 for any reasonable outfit. Cheap, light trucks about the half-ton size are frequently favoured at about £150 for an old model.

Summing up in round figures, the total capital outlay may be as follows:—

	£
Land	6000
Buildings	2000
Stock	2290
Implements	300
Car and trailer	250
	£10,840

Or £10 16s. per ewe.

This is the position as it is at the moment for a farm getting all stock away fat and carrying no lambs over to hoggets.

Gross Farm Income

Given normal seasonal conditions, with a reasonably settled farm management policy, it is possible to estimate conservatively the gross receipts for a year, and this must be the basis of any budgeting, voluntary or otherwise. A financing authority may appear unduly conservative, but it must be remembered that a farm averaging 1000 ewes and 100 cattle over a period may be grossly over-stocked one season and well below capacity the next season, and receipts vary accordingly. Also, if at the commencement of operations two successively bad seasons occur, the results would be nothing short of disastrous, with accumulated interest and other charges presenting a frightening prospect.

From a flock of 1000 ewes it would be normal to reckon on 110 per cent. lambing—more from aged ewes, possibly less than 100 per cent. from 2-tooth ewes. After considering lambing losses one could count on getting 950 fat lambs on a conservative

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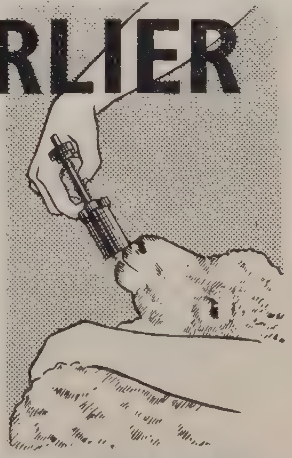

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basis. For many years fat lamb prices have been reckoned at £1 net per head, allowing a safe margin, but on freezing prices of the last two years this could safely be raised to at least 22s. after deducting charges. From 1000 ewes the conservative estimate would be for 950 lambs at 22s., total £1045. At the present time the expectation from the type of farm under consideration would be somewhat more.

On the Waikato type of fat lamb farm the wool clip per ewe, including crutchings, works out at about 8½d. a lb., less from old ewes, more from 2-tooths, with a common range of between 7lb. and 10lb., according to seasonal conditions and the class of stock. The value of wool per ewe reckoned at 8s. after deducting freight and charges allows a small margin, but the range is liable to be between 7s. and 9s. 6d. At war control prices one could budget on the wool from 1000 ewes returning at least £400. Where the average age of the flock is lower the wool clip runs out rather heavier, but this gain is at least offset by fewer and lighter lambs from 2-tooth ewes.

Regarding the returns from cattle, the position is confused by very high store stock prices ruling at present, and the widely different management policies. On a fat lamb farm it is at least expected that run cattle should all be quitted fat. The common policy is to buy in 18-months to 2-year store cattle at spring or autumn cattle fairs, and to sell fat, according to conditions, about nine months or so later. Run cattle are required on a fat lamb farm quite as much for pasture control as for profit, and their absence at particular times would lead to serious pasture deterioration, and so to a lower sheep-carrying capacity. Therefore a farmer must buy these store cattle, even if there is every prospect of practically no profit from retaining the cattle for a period of months. The number of cattle required may be reduced by extending the growing of crops and the saving of hay for sheep, but in actual fact this practice is limited in the Waikato. The common feeling is that there is no effective alternative to purchasing store cattle for pasture control, and the measure of that feeling is the present high prices, which represent a very small profit margin.

To make run cattle a substantial source of income on a fat lamb farm, particularly at the present time, requires experienced management and skilled judgment of markets, which cannot be expected from a newcomer to farming. It is commonly the case that profits are made by others on the faulty calculations of the newcomer, who is well advised to carry the minimum number of store cattle necessary, perhaps even as few as 60 per 1000 ewes.

An indication of fairly normal and what are now described as reasonable store cattle prices ruling a few seasons ago is given below:

	Steers. £ s. d.		Heifers. £ s. d.
Yearling	5 5 0		3 7 6
2-year	7 7 6		4 17 6
3-year	9 0 0		6 0 0
4-year	10 12 6	Breeding cows	5 15 0

Based on these prices, with roughly 30s increased value per year in store condition, net profit when quitted fat could be quite safely reckoned at £2 10s. to £3. The store cattle market is higher today by 30s. to 40s. or more per head for steers, and by 27s. 6d. to 35s. for female stock, and it is questionable whether one could reckon on even £2 net profit from fattening.

It is not usual for run cattle to be bred to any extent on fat lamb farms. If a breeding policy is followed, the calves may be got away fat off the mothers at eight to 10 months as runners, netting £6 per head, but there is a capital tie-up of not less than £6 10s. per head for each cow carried. The other alternative would be to sell the heifer calves as runners, and quit the steers fat at say 20 months, according to market and feed conditions. Reckoning on 85 per cent. successful calving, this policy would net about £4 to £5 per cow for the season, offset by the higher capital in breeding stock and possibly some reduction in the number of ewes carried.

Especially where dairy cows are run in conjunction with sheep it is common to find dairy calves being reared for sale as in-calf heifers at 2 years old to meet the spring demand of dairymen. This practice is more usual with

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smaller flocks of about 300-600 ewes, and where skim milk is the dairy by-product. The selection of calves requires a good judgment of dairy stock, especially if it is proposed to buy in weaner calves, in which case it is most desirable to know something of the herd from which they come. The difficult part of heifer rearing is to provide adequate good-quality winter feed through the two winters to ensure the full development and finish that bring good prices. Raising dairy heifers in this way is more than a means of pasture control, because this stock cannot be expected to clean up the rough grass or to be grazed hard in the same way as run cattle. Ordinarily, quality weaner heifers may be bought for about £3 to £4, though present prices range from £4 to £5 5s. Whereas a couple of seasons ago good in-calf heifers sold at about £10 or so, at the present time spring-calving heifers have been fetching around £11 to £14, or more, but this is not an average over several years. On the other hand, second-grade heifers bring £5 to £6 less. Over a period the practice should be worth at least £3 per head annually, or about £4 10s. where stock are bred on the farm.

Considering run cattle only, taking all sides into account, and conceding that present prices are unusually high, a budget of £2 net profit per run beast is a basis to reckon on.

Summing up, the minimum expectation of profit from 1000 ewes and 100 cattle after deducting marketing charges is as follows:—

	£
950 lambs at 22s. each	1045
1000 fleeces at 8s each	400
100 cattle at £2 gain per head	200
	£1645

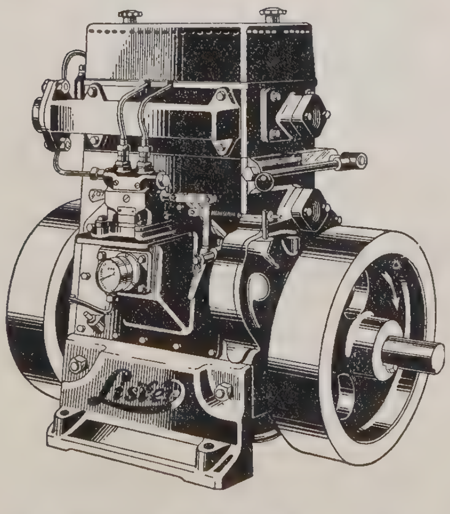
What frequently happens is that any or all of these items may turn out better, but a prudent farmer regards the extra mainly as a surplus to balance out the inevitable year of bad luck. One outstanding example of a setback was the outbreak of facial eczema a few years ago, but bad runs may be caused by heavy lamb mortality, milk fever in ewes, drought, or a dozen other main causes. In financing farm operations the lending agents must take a reasonably conservative view of returns that does not count on windfalls or good fortune. To gamble on something better would incur more than normal risk, though in an average to good year one would very likely get away with it. All kinds of variations of the estimates above occur when special markets are sought, such as the early lamb market or the winter fat stock market, but these are not normally within the reach of an inexperienced farmer. They require expert judgment, usually extra capital tie-up, and they incur additional risk. This is particularly true of fat cattle.

Stock Maintenance Costs

Roughly speaking, the ewe flock is replaced in less than three years. If the practice is to buy in 2-tooth ewes for replacements, between 20 and 25 per cent. of the flock will have to be purchased each year; with 4- and 5-year ewes replacements may be 50 per cent.; more with 6-year ewes. Offsetting the cost of these replacements is the sale of cull ewes. Taking a look at a number of mixed-age flocks on farms a few seasons ago, we find replacement costs actually working out this way:—

	£
Bought 350 ewes at 24s.	420
Sold 295 culls at 14s.	207
Cost of replacement	£213

or approximately 4s. per head of 1000 ewes carried. Taking into account the necessity for replacing upwards of a third of the rams each year at a cost of approximately £65, the cost of



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flock replacement runs out in the neighbourhood of 5s. to 5s. 6d. per ewe carried, and this holds good whether the policy is to buy in 2-tooths or older ewes; it is a fairly sound basis to budget on. Returns from cull ewes are reckoned to average 14s. a piece through the freezing works, but some may fetch more in the saleyards, according to their condition and the state of the market. Any extra would be regarded by the farmer as his special profit. Replacements bought must be sufficient to cover ewes culled plus mortality.

Principally due to bearing trouble, sleepy sickness, and other causes associated with lambing, normal ewe mortality ranges from round 7 per cent. in an aged ewe flock to just over 4 per cent. with 2-tooths, and there is a small come-back in dead wool and skins at about 5s. net each. Mention might be made here of lamb mortality, which accounts for substantial losses in fat lamb production. While around 110 per cent. of lambs would be dropped from a mixed-age flock, there is a normal death-rate of approximately 9 per cent. prior to docking, caused mainly by cold and wet conditions at lambing and pulpy kidney, though some lambs would be born dead. With only one man tending 1000 ewes at lambing time the mortality is likely to be higher still. Deaths subsequent to docking would account for another 2 per cent., frequently more. In the circumstances and on a reasonably conservative basis, one would count on actually marketing some 950 lambs from a 1000-ewe flock. It has been claimed that a reduction in lamb mortality affords the best scope for cutting losses on a fat lamb farm. Skilled management may even raise the lambing rate and also reduce losses.

Current Annual Expenses

Seasonal expenses depend a lot on how much a farmer works, both physically and mentally, how much he can afford, the degree of mutual assistance by farmers in the locality, and how far general maintenance is allowed to slip. Especially without unpaid family labour, some casual labour is required, perhaps for lambing, harvesting, cultivation, drain cleaning, or fencing repairs. To manage a fat lamb farm of the 1000-ewe size is a full job for an energetic man, and in busy times it is liable to get beyond him, if there are crops to look after. A minimum expense of £60 for casual labour must be reckoned on, and it may be commonly twice as much, especially if cropping is undertaken. At the ruling weekly adult wage of £5, the lower figure represents only 12 weeks' work for one man.

Some annual expenses are pretty closely assessable. For example, rates, though subject to a rising tendency with occasional changes on property re-valuation, are a substantial annual charge of say £40. For income tax purposes a car allowance for farm purposes only is commonly given as £40 to £50, but petrol rationing may reduce this somewhat. While award rates specify a minimum of 33s. per 100 for shearing, 2s. 8d. per hour for pressers, and 2s. per hour for shed hands, rates usually paid are 34s. per 100 for shearers, with shed hands at 3s. per hour, plus rations, allowed at 5s. per day. At one time the costs of shearing, crutching, and dipping used to be based on an estimate of £4 per 100 ewes. On present-day rates this is in excess of £5. Approximate charges for 1000 ewes are:—

	£
Shearing	25
Crutching	7
25 packs and twine	10
Dip	7
Incidental	5
	£54

Fencing repairs are subject to postponement in hard years, and may become a large item in deferred maintenance. At the present time, with posts at £25 or more per 100, freight extra, and wire more than double prewar prices at £50 per ton, fencing is a costly item. New fencing is liable to cost about £4 5s. per chain, all material purchased. Wise tree planting in the past is yielding posts now, but in the absence of these circumstances and where time and facilities are available some farmers make their own concrete posts rather than go on the market to get their requirements at ruling prices. Allowing for some saving in this direction, an annual fencing repair bill will probably be around £45. The existence of suitable grown hedges, such as barberry, may assist in reducing fencing costs.

There is full recognition now that the adequate and judicious use of fertiliser is a necessary investment, and wartime rationing has emphasised this. The importance of superphosphate is also shown by the pegging of prices at approximately £4 per ton, freight extra, incurring a substantial Government subsidy to cover the extra cost to the manufacturers. Only in very drastic circumstances would a farmer make a voluntary reduction on his fertiliser outlay—he cannot afford not to manure. With an unlimited fertiliser supply a handy basis for reckoning lime and superphosphate costs is 10s. per acre. Naturally this is a variable item between farms and seasons. Similarly cartage and freight depend more or less on the distance from town and the road and rail facilities. They are tentatively set down as £50.

Fire insurances run out at about 6s. per £100 value, and the accident insurance rate is approximately 25s. per £100 of wages, making a total allocation of about £8 to £10. In reckoning out a figure for maintenance of plant and buildings it has to be remembered that tradesmen's charges for country jobs will run out at a higher figure than for town work, but against this is the fact that a farmer himself does carry out a large proportion of his constructional and repair work to avoid cash outlay. A suggested annual cost is £40.

Further than this, there are the thousand-and-one incidental items, foreseen and unforeseen, which actual budgeting experience has shown will incur the surprising cost of about £100. There are drenches and licks (£10 to £15), telephone, horse covers, rural delivery, chaff, gumboots, subscriptions, oil, disinfectant, tool handles, dog tax, electric power for the water supply, and all the rest of it.

Summarising, here are the possible annual current costs that a farmer must

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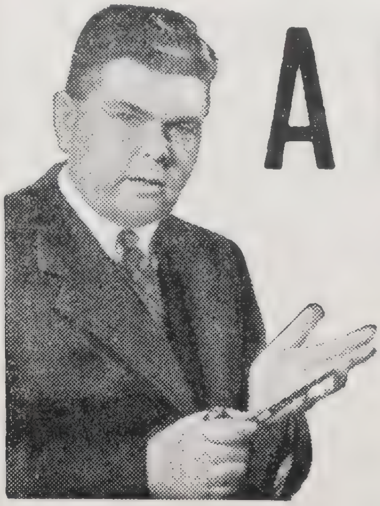

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160,000 copies of "PLOWMAN'S FOLLY"—the most discussed book on Farming Topics of all times—have already been printed and the publishers, Messrs. Drosset and Dunlap Inc., 1107 Broadway, New York, in a letter to me written on December 1st, 1944, state:—

"We would say that we will sell 100,000 more in the next 12 months."

Professional etiquette demanded that I, as the author of "THE AWAKENING," should send a complimentary copy of my publication to Mr. Edward Faulkner—the renowned author of "PLOWMAN'S FOLLY."

In a letter of December 18th, 1944, in acknowledgment, Mr. Faulkner says to me,

"'THE AWAKENING' itself is well gotten up! It is admirably set up and you are to be congratulated."

Naturally I also sent Mr. Faulkner a pamphlet on my "BEVIN" Harrow, so in his letter Mr. Faulkner says:

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"THE AWAKENING" at 2/6 is far too cheap, but I'm not increasing the price. A handy coupon is attached.

Now I'm "TWO-UP" on other machinery manufacturers in New Zealand. I have the "BEVIN" Harrow and "ALBEE"—the greatest agricultural and gardening tool of all time. There is only one thing wrong with them—they both sell far too freely.

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Many thanks,

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Please send me particulars of your
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	£
Wages	80
Shearing, crutching, and dipping	55
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Fertiliser	140
Maintenance of plant and buildings	40
Fire and accident insurance	10
Rates	40
Car allowance	40
Other	100
	£550

Horses and Tractors

The scarcity of tractors and the high prices at present have practically ruled out the consideration of purchasing one. Particularly where capital is short, and on a fully-developed farm, horses are the rule for a 1000-ewe property. On an undeveloped area the question may be quite different. To tie up £300 to £400 in a tractor, with a running cost of 4s. or more per hour, requires careful management to justify the expenditure, and a tractor does not necessarily eliminate working horses from a farm. When farm practice and policy become well established a tractor may become indispensable on a short-handed farm, especially if cropping is undertaken, but the heavy expenses may be inadvisable within the first year or two of taking up a developed property. There are apparent benefits from the co-operative use of farm machinery, but this principle has yet to be tested in practice.

Net Income

An endeavour has been made in this article to set down the position as it exists today, some comparison being made with what is now regarded as the more normal times of a few years ago. This surely provides a better guide for estimating farming possibilities in the future. The estimated returns are the least that should be expected under fair management in an ordinary season; very probably they would be more, but, as has already been emphasised, in budgeting for finance it is not safe to make higher estimates. The costs given, while subject to considerable variation, are supported by the experience of farmers, stock firms, and other practical agencies.

Expenses.	£
Current expenses	550
Stock maintenance	250
Gross profit	875
	£1,675

Obviously seasons and market conditions have very great influence on net income to the farmer, but it is considered that on the average the proposition we have been reviewing should return at least between £300 to £500 to the owner, plus interest on capital. In addition there are the normal farm perquisites which reduce living costs.

This article is not designed to set out farm costs and returns from an accountant's point of view, and the circumstances do not readily lend themselves to making out a balanced statement. For what it is worth an attempt is made below in round figures. A common basis for calculating depreciation is:—Buildings 3 per cent., plant and implements 5 per cent., both on new values.

Receipts.	£
Lambs	1,050
Wool	400
Cattle profit	200
Sundry	25
	£1,675

The gross profit of £875 would be distributed somewhat as follows:—Interest £475, depreciation £100, and management return £300.

◆

Crop Subsidy Scheme

OUR obligation to the Pacific Armed Forces is vital. We need as much pig-meat as possible today, but, as few farmers can produce all bacon, extra weight on the pig with the right conformation is desirable.

Men who make pig-farming pay agree that pigs cannot be farmed for profit by letting them look after themselves. Where this state of affairs exists there is a shameful waste of dairy by-products in the spring and summer months, and an unusually large consignment of unfinished pigs is sent forward in the autumn.

The absence of Australian stock feeds will no doubt increase the percentage of these light-weight carcasses this autumn. This is most unfortunate, especially when it is realised that many of these pigs could have been carried to much higher weights, if producers could be induced to include the growing of roots for pigs in their annual farm routine. There is at least one very good reason why roots should be grown for pigs. At the present time imported grain meals are increasingly difficult to obtain, and there is every reason to believe that the position will not improve next year.

It will be appreciated that every acre of crops grown for winter feeding reduces the necessity of importing at least three tons of grain, and as production of pig-meat in any one season is dependent upon the winter feed supply available, it must be obvious that any increase in pig production centres around the provision of winter feed.

The only sure way of even maintaining present production of pig-meats is by the provision of winter forage crops, supplemented by such grain crops—barley, maize, and peas—as can be grown in New Zealand. The present is not too early to plan for next season's crops. Regrets will never make up for lost opportunities. The annual decline in pig production over the past three years can mean only that New Zealand's post-war policy will be seriously affected if this drift is not arrested now.

The position as it stood at February 22 is set out below.

District.	No. of Applications.	Acres in—													Total Acreage.
		Carrots	Kumikumi.	Pumpkin.	Piemelon.	Barley.	Sugar beet.	Silver beet.	Mangolds.	Swedes.	Artichokes.	Chou moellier.	Peas.	Maize.	
Auckland	183	14	40¾	79	—	8¼	18	4	10¾	360¼	8¼	24½	6½	238	812¼
Bay of Plenty	296	85¾	379	137½	¼	34½	15¾	—	6	482¾	84	77¼	13	773	2,088¾
Canterbury	173	11¾	—	4¾	—	502	14½	12	71½	188¼	19¾	44	132¾	2	1,003¼
Northland	185	34¾	20¾	105¼	¼	5	7¾	35½	4¼	389¼	26¼	51½	5½	293½	979½
Otago-Southland	79	7½	—	—	—	235½	6¾	—	42½	196¼	7	32	21	—	548½
Tairawhiti	240	19½	65	277¾	2	87	47	2¼	29	38¾	8	29	1½	450½	1,057¼
Taranaki	175	33	4¾	12½	—	35¼	40¾	1¼	14	207¼	29½	79¼	42	20	519½
Waikato	503	129¼	247¼	107¾	2¾	197¼	48¾	1½	20¼	927	44	152	36¼	314¾	2,228¾
Wellington	285	32	½	9¾	—	367¾	63¾	3	43	354¼	5¾	179¼	118	13¾	1,190¾
Grand Totals	2,119	367½	758	734¼	5¼	1,472½	263	59½	241¼	3,144	232½	668¾	376½	2,105½	10,428½

Wheat, Oats, Barley, etc.
PICKLE WITH 'CERESAN'
BAYER'S DRY SEED DRESSING
TRADE MARK

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PICKLE WITH 'CERESAN'
BAYER'S DRY SEED DRESSING
TRADE MARK

Make the Most of Grass Growth

By

P. S. SYME,

Instructor in Agriculture,
Warkworth.

IN their efforts to increase production some farmers, while concentrating on increasing the grass growth, are apt to overlook the amount of valuable feed which is sometimes wastefully used. This article discusses the importance of efficient grazing management and the need for the conservation of surplus feed.

This well-thatched stack left over from the previous year now provides a very welcome insurance reserve to compensate for this year's bad season.

FARMER visitors, men eminent in their line at Home, frequently express surprise at the impressive output of New Zealand dairy farms and find much to enthuse about concerning the very high standard of many of the permanent pastures. While due credit must be given to the beneficent climatic conditions, much credit is also due to the initiative and enterprise of the New Zealand farmer. The world's Blue Ribbon for the highest dairy production per capita was not won and held merely by the fortuitous bestowal of favourable climatic conditions. Phenomenal production figures must be earned by good management; they never come simply as a gift.

Two Main Problems

In developing and improving a farm the first objectives are usually those which promise the best return for the time and labour expended. Usually, two problems are involved—improving the feeding and improving the breeding—and these proceed concurrently.

Both are admittedly important, but once a certain stage has been reached it will be found as a rule that the former offers by far the greater scope, and it is indeed a truism to say that half the breeding goes in at the mouth.

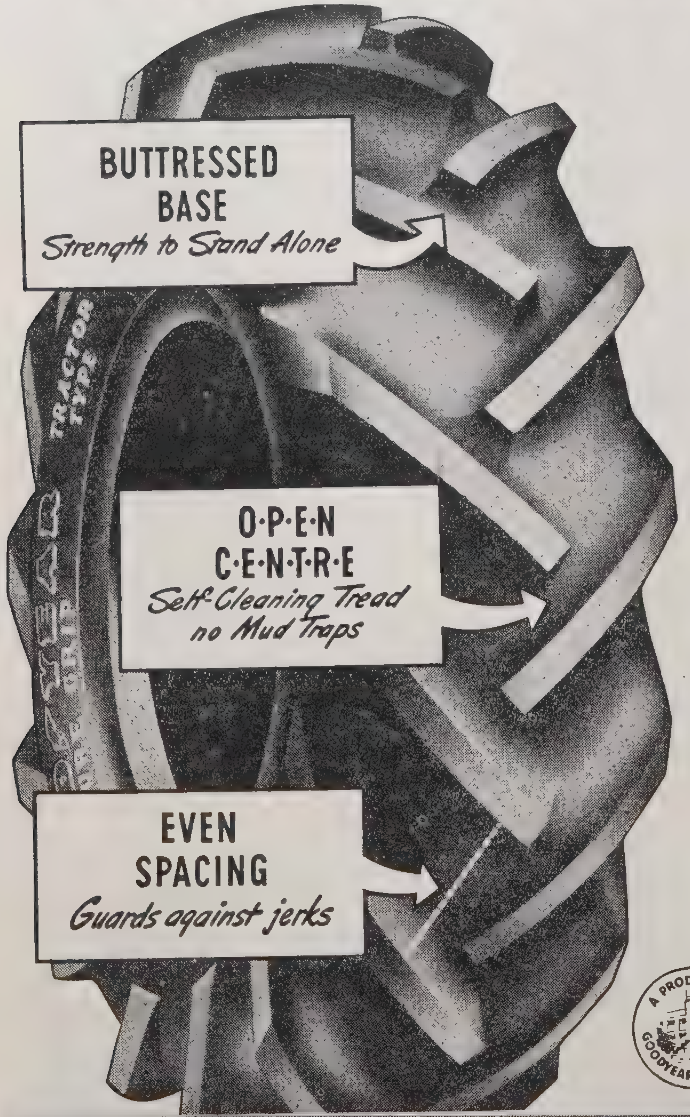
How best can the feeding on the average farm be most quickly and economically improved? This is the problem which today is confronting most farmers. The answer must obviously depend to some extent on the type of farm and the stage of development reached. More efficient topdressing, the growing of supplementary crops and the regrassing of pastures, or closer subdivision and more efficient grazing management may each or all lead to improved feeding and higher production yields. In general, however, there is still another solution and one which applies to a very large number of farms. It is, moreover, an answer which appeals to common sense and is susceptible of proof—MAKE MORE HAY.

Natural Growth Insufficient

While national patriotism extols the New Zealand climate, it must be admitted that from the farming viewpoint, at any rate, it is not quite perfect. Experience has long shown that grass growth throughout the year is very uneven, and if left to rely on nature, the cow would be subjected to alternations of surfeit and famine. In the spring growth is apt to be embarrassingly lavish; in the winter it is too niggardly, so that two-thirds of the pasture growth occurs in about one-third of the year. Thus, the

Surfeit and famine. This can be prevented only by efficient grazing management and systematic conservation of surplus growth.

Tyres built this way can't "GUM UP" your day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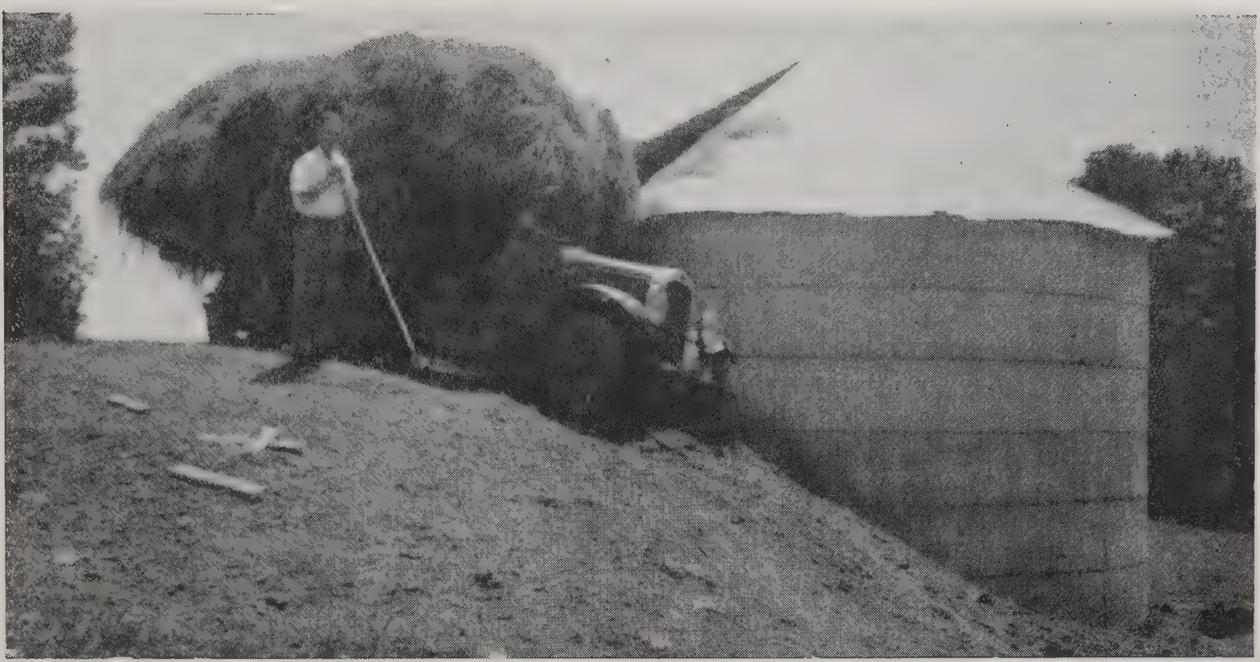

The owner of this silo uses it to conserve surplus feed at any time. The silo is sunk 6ft. into the ground and has a capacity of 100 tons. The farmer considers that it has saved its cost many times over in conserving feed which would otherwise have been wasted. Its use has also been of noticeable benefit to the pastures. Note the loading ramp built with the excavated earth.

problem on many farms is sometimes **not so much increasing the production of feed, as of utilising it to the best possible advantage.**

While common sense suggests that alternations of surfeit and famine must depress production yields, scientific data can go still further and can provide concrete proof, as shown by figures compiled over a number of years by Dr. W. M. Hamilton. These figures prove beyond any possibility of doubt **that 60 per cent. of the annual seasonal variation in dairy production is associated with the area cut for hay and silage in the previous season**—that is, with the efficiency of the pre-lactation feeding. These are startling figures, and provide matter for serious and careful consideration.

Viewed from this aspect, the conservation of **surplus** grass growth becomes of paramount importance and offers tremendous scope for uplifting the national production of dairy produce.

Short of the Goal

It is claimed by many farmers that they always do make plenty of hay for their requirements. It is argued in some districts in the north that the mild climate results in prolonged autumn growth, and that growth is not completely dormant even in the winter months. No doubt, this is to some extent true, but it is also true that on the heavy soils growth is correspondingly late in spring.

Generally, statistics show that the average quantity of hay saved per cow is far too low, and it is the average farmer with whom we are concerned. Many farmers make a practice of conserving 7cwt. or 8cwt. of hay equivalent per cow and consider that this is ample. When it is considered, however, that many of the most successful farmers in any district habitually conserve 15cwt. of hay equivalent per cow and find that this is not too much, it will be seen how far the average farmer falls short of what should be his goal.

The noticeable and logical result of having a sufficiency of hay is that the cows winter better and are therefore in a condition to produce better in the following season. It has also been repeatedly shown that more hay saved leads to better management of the pastures, resulting in still more growth.

Management Important

Undue emphasis is apt to be laid on the spectacular part played by topdressing in building up a productive sward. Undoubtedly, topdressing is of prime importance, but it should not be allowed to overshadow the importance of good management. If the best results are to be obtained, the topdressing and the grazing management must to some extent work in conjunction.

From the viewpoint both of convenience and efficiency, it has become a common practice to apply the bulk of the topdressing in the autumn. Careful experimental research has shown that so far as total increase in production over the year is concerned, it matters little in which month of the year the fertiliser is applied. What does indeed matter, however, is the **time** at which this increase is obtained. As grass feed is of especial value in the off-season, it is particularly desirable that as much as pos-

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sible of the increase due to topdressing should occur in that period. This means that for late autumn and early winter growth the fertiliser should be applied before the ground has become cold and while there is still a good prospect of a reasonable period of good growing conditions.

Value of Flying Start

If the fertiliser is applied while growth is still active the plants are able to derive full benefit and to get a flying start into the winter. Grass, like oats or most other forage plants, stands up to cold and adverse conditions best when it has had an opportunity to develop plenty of leafage and a good root system, and it will frequently be noticed that a pasture in a vigorous and forward condition at the beginning of winter is able to make appreciable growth, while a late and more closely grazed sward is at a virtual standstill until the spring.

Translated into practice, this implies that selected fields should be grazed down and topdressed early and then closed up with a view to providing out-of-season feed. It is at this time that grazing management becomes of special importance, as it has repeatedly been shown that the system of grazing adopted has an important bearing on the yield obtained.

Basis of Rotational Grazing

The leaf of a plant may be regarded as a factory for the absorption of carbon, and each time a grass is closely grazed it must borrow food material from its root tissues to build up a new factory to provide sufficient green leaf surface to enable it to start manufacturing material for fresh growth. If the plant is repeatedly defoliated by close and persistent grazing, the consequent repeated borrowing depletes the root system and results in a severe setback. If, on the other hand, the grazing management permits of a continuous period of vigorous growth, this repeated borrowing is unnecessary. Further, if the leaf is not eaten down too close, it can again begin to make new growth without having to borrow from the roots, resulting in a quick recovery and improved rate of growth. This, briefly, is the foundation principle of rotational grazing.

The sward should be heavily stocked and eaten down quickly, then closed up to permit of re-growth before it is again grazed. The grazing should not, however, be closer than say, two to three inches so as to promote a speedy recovery. While this system of grazing applies throughout the year, it is of special importance at the period when growth is slow and over-grazing is so much more dangerous.

A Reserve of Hay

Obviously, if some fields are to be closed up early and if the grazing management is to conform to the interests of the pasture, it is important to have a good reserve of hay or its equivalent. It may seem paradoxical, but the early and apparently wasteful use of hay may actually prove economical, in that the resulting increased grass growth tends to reduce the amount of hay required.

Choice of Fields Important

In selecting fields for early closing up it is important to choose, if possible, those which are sheltered and have a warm, well-drained soil—factors important both from the viewpoint of winter growth and the grazing of the stock. It is also important to see that the land is of high fertility with a good proportion of ryegrass present in the sward. Even the best management will not induce good winter growth where conditions are in any respect unfavourable. It will be found that a field which is rather too clovery will benefit by the restricted grazing and will produce a better balanced sward in the following season.

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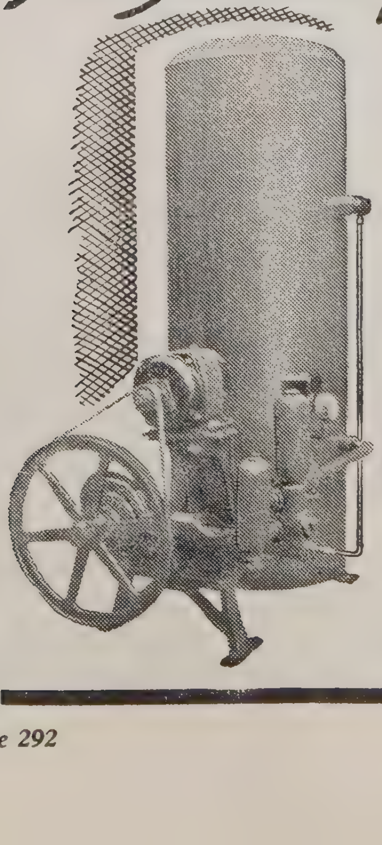

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Needless to say, if the grazing is to be properly controlled, intensive subdivision is essential to permit of the requisite stocking density per acre. If the growth is carefully rationed and not grazed too closely, it is surprising how even a limited area can be eked out, to the noticeable benefit of the herd, and how quickly the sward can regenerate for another grazing cycle.

Not Hallmark of Good Farmer

Many farmers have relied for much of their winter feed on the rank, stemmy grass rejected by selectively grazing stock in the heyday of the growing season. Too much rank, patchy and stemmy growth in autumn is not the hallmark of the good farmer if it represents feed which might have been used to better advantage. Admittedly, the stemmy growth can keep the animals alive, and, if autumn-grown, may have an appreciable feeding value.

Closer subdivision and better controlled grazing, however, might have enabled much of this seasonal surplus to be conserved while its feeding value was still high. Although conditions may not permit of haymaking, ensilage is still practicable even late in the season, and fodder so conserved can prove of inestimable nutritional value to undernourished stock.

Paspalum Needs Management

This wastage of potential feed is often particularly noticeable on paspalum-dominant pastures where the rank growth is apt to smother the clover and ryegrass and so prevent their making their full seasonal contributions to the pasture growth, and is also the reason why one finds some farmers even today who dislike paspalum. The fault lies not in this wonder grass, but rather in the mismanagement which fails to keep it under proper control.

While readily conceding the invaluable part played by heavy topdressing in raising production in the pre-war years, many farmers with long experience have suggested that there is a growing tendency to place too much reliance on sheer volume of growth rather than on the more efficient utilisation of the growth obtained. There is little profit in producing extra growth if it is merely allowed to run to seed-head and prove a virtual embarrassment. As the surplus growth is essentially bound up with the seasonal flushes of a not-quite-perfect climate, the remedy lies not in increased stocking but rather in improved grazing management and better conservation.

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Announcement

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Because of the number of enquiries received by Ford Dealers and ourselves, and the varied reports circulating, we feel that the public is entitled to a statement with regard to the future position respecting new passenger cars.

So far as the production of new Ford and Mercury cars is concerned, the future depends primarily on the war situation. Ford Factories in all Allied countries continue to be engaged on the production of munitions and transport equipment for the fighting forces, plus, in some places, a limited output of Commercial vehicles for essential industry.

The latest official advice from overseas is that no portion of the automobile industry has been released from war requirements to proceed with passenger vehicle production.

When ultimately the progress of the war allows for the resumption of passenger car manufacture overseas, Ford—within a few months of receiving the word 'go'—will be making new cars again. When that will be—whether before the end of the war or after it—is not for Ford to decide.

All we can say at this stage, therefore, is when Ford 8 h.p. Anglia and Ford 10 h.p. Prefect models from England and Ford V8 and Mercury models from Canada are received in New Zealand they will be the latest being produced overseas and will incorporate fresh improvements resulting from war experience.

In the meantime, with the securing of Victory as a number one priority, Ford can only recommend every owner to continue to take the greatest care of his present car or truck—especially the tyres—and to enlist the Ford Dealer's aid in maintaining it in good running order, thus ensuring maximum performance, economy and life.

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FARMING A SMALL HOLDING

In Rotorua District

By
C. R. TAYLOR,
Fields Instructor, Rotorua.

THAT there is a very definite place for the small holding in the rural economy of this Dominion is clearly demonstrated by the experience of Mr. E. A. Rumming, Ngapuna, Rotorua.

Above.—Part of tne youngest portion of the orchard, the trees being barely half grown. The system of pruning allows cultivation close to the boles of the trees.

BEFORE coming to New Zealand in 1913, Mr. Rumming had been associated with general gardening and glasshouse activities in England. Until the middle of 1915, when he left to serve in the Great War, Mr. Rumming spent several months travelling the countryside and engaging in odd jobs here and there before finally settling down to a position as cowboy on a station property at Reporoa, Rotorua. His employment on this property lasted for a little more than a year, during which time he graduated from cowboy to teamster.

Part of a tomato crop of some 15 years ago. This area is now in orchard.

On his return to New Zealand in the early part of 1918, Mr. Rumming took a six to seven months' course at the Ruakura Experimental Farm, Hamilton (now the Ruakura Animal Research Station), in poultry, orchard and garden work. Leaving Ruakura towards the end of 1918, Mr. Rumming returned to the Rotorua district in early 1919. Here he was engaged in breaking in virgin land until he acquired his first and only 10 acres of New Zealand soil some two years later. It is interesting to note that this small holding was located within a quarter of a mile of the larger block which Mr. Rumming was instrumental in developing.

Undeveloped Property

In June, 1921, while still a young man, Mr. Rumming began the task of developing his own property. When first acquired, the small property of 10 acres had formerly been used for pig raising and was without buildings or shelter of any kind except for 20 chains of barberry hedging just planted. The fences were not in the best of repair, while the only available water was from a well dug at one end of the farm. One of the first jobs to be undertaken was the erection of a dwelling. Not possessing very much capital to finance a programme of initial development as well as build a house, however, Mr. and Mrs. Rumming made do with the best their circumstances could afford. Consequently, the dwelling illustrated was built—plain but useful, and capable of being added to and altered. The accompanying illustration shows the same building as it appears today set among beautiful surroundings and in vivid contrast to its former almost barren appearance.

In the first season (1921-22) Mr. Rumming ploughed and cultivated half the farm (five acres), which previously was in rank grass, and cropped it with the following vegetables:—

Potatoes,
Carrots,
Parsnips,
Red beet,
Swedes,
Onions,
Cabbage, and
Pumpkins.

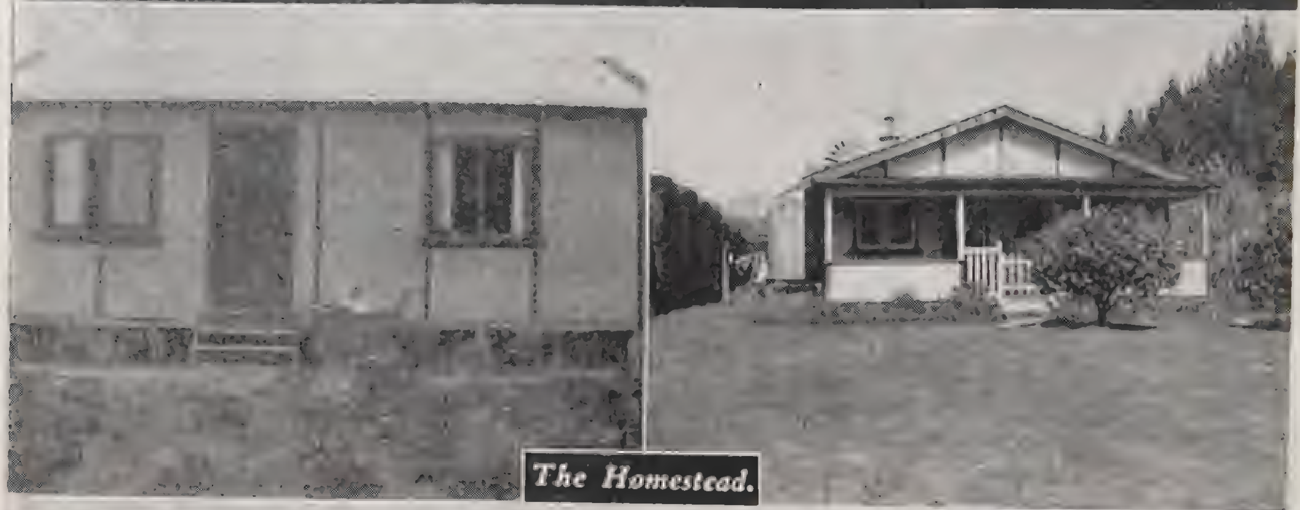
Some of these crops later turned out more or less a failure, as lack of finance prevented the employment of sufficient labour to do the necessary weeding and thinning.

The rhubarb patch. Maori women are ideal for this class of work.

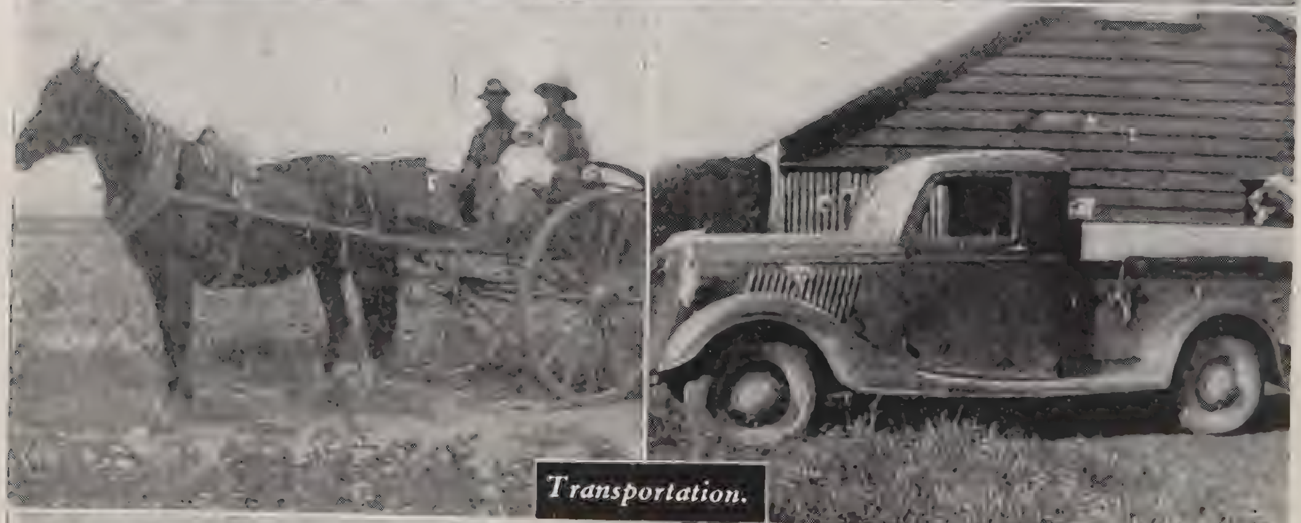
DEVELOPMENT OF A SMALL HOLDING

1921

1944



The Homestead.



Transportation.

Spraying.

Ten Acres Cultivated

The following season (1922-23) the entire area of 10 acres was brought into cultivation. Seven acres were devoted to vegetable crops similar to the previous year, two acres were sown down in permanent pasture and lucerne (one acre of each) for horse feed, and one acre was planted in fruit trees, mainly peaches, plums, apples and a few pears. Largely due to suitable financial arrangements having been completed at this stage, and with no dearth of competent female labour, the general results this season were a distinct improvement.

From 1924 to the early part of 1929 the vegetable cropping programme remained practically the same as in the second season of operations, except that in this period rhubarb and tomatoes, together with the raising of large quantities of young plants of the conifer family, were added to an already fairly full schedule. During these years Mr. Rumming also undertook the gradual establishment of a poultry flock, which by the end of 1929 had reached a total of 200 birds of the Black Orpington breed. In addition, *Lawsoniana* and macrocarpa hedges were planted and maintained around the three remaining sides of the farm as well as two five-chain breakwinds of the same varieties running laterally across the section and approximately dividing it into three equal parts. Still further permanent improvements included a large, well-built shed incorporating garage, implements and general storage space, and the provision of a windmill for the supply of water.

Towards the end of 1929 the two-acre patch of grass and lucerne previously referred to was ploughed and turned over to vegetable production, as by that time the horse had been superseded by a small garden and orchard tractor fitted with a plough and all necessary cultivation attachments.

Establishment of Orchard

For the next ten years Mr. Rumming devoted much of his attention to the final establishment of his orchard and bringing it by gradual steps up to its present area of five acres. This policy did not involve an immediate drastic cut in vegetable production, but it did bring Mr. Rumming's original scheme much closer to fruition—that was, to become ultimately an orchardist with poultry and a very limited range of other produce (rhubarb, asparagus, gooseberries and some vegetables) as sidelines whereby to spread the income-year as far as possible.

Actually, the season 1935-36 saw the last of the comprehensive range of vegetables that had been grown consistently and successfully since 1922-23, after which potatoes, peas, beans and cabbage, apart from asparagus and rhubarb—the last two crops being perennial in nature are regarded as being more in line with the orchard produce—were the only annual vegetable crops grown. Towards the close of this particular period the poultry flock was increased from 200 to 400 birds due to the success that had attended the running of the smaller flock.

From 1939 to July, 1942, the orchard and poultry were by far the chief interests. Mrs. Rumming attended to the routine requirements of the birds and the packing of eggs for sale, leaving her husband to look after the more intricate parts of the job, such as chick incubation and the selection of birds for the breeding pen. Apart from asparagus and rhubarb, practically no vegetables were grown at this time, for the care of all phases of orchard work, coupled with the sale of produce and the maintenance of buildings, fences, hedges and implements, was a full-time job.

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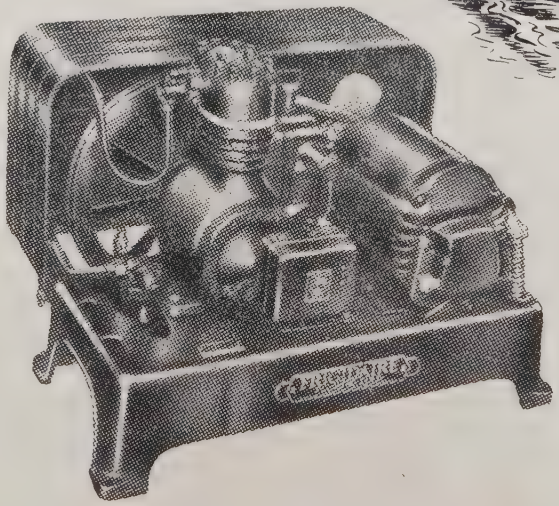

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Production from Ten Acres

In July, 1942, Mr. Rumming leased his property to the Government as part of the Services' Vegetable Production Scheme, while he himself accepted employment with the Department of Agriculture, Rotorua, as overseer of the Rotorua Services' Vegetable Production project. This arrangement lasted until September 30, 1944, when the lease was mutually terminated and Mr. Rumming again assumed control. A check-up made at the time the property was leased to the Government indicated the following utilisation of the ten acres taken over:—

5 acres in mixed orchard—little over half in full bearing.
2 acres in green crop and available for vegetable production.
1 acre taken up with farm buildings, roads, and shelter belts.
½ acre in poultry layout (approx. 400 birds).
¼ acre in rhubarb in full bearing.
¼ acre occupied by dwelling.
1 acre in asparagus (¼ acre full bearing; ¾ acre in 3-yr.-old plants).

Total 10 acres.

As an indication of the production of which this small farm is capable it may be mentioned that in the season 1942-43, the first season the Government was in control, the following lines were actually delivered to the services in the quantity set out against each:—

	lb.
Fruit, mainly apples, but also pears, peaches and plums	57,582
Rhubarb	11,922
Asparagus	2,106
Vegetables, mainly cabbage and lettuce	24,550
Total	96,160
Eggs	5,407 doz.
Poultry sold: Old hens	192
Young cockerels ..	206

In connection with the planning of the orchard it is noteworthy that 14 different varieties of apples were planted with the object of facilitating the spread of harvesting over the longest possible period, thus making it easy for one man to handle and avoiding gluts of any one or few varieties. In practice, this plan has worked out exceedingly well, and has often been the means of obviating losses that otherwise would have occurred through either a temporary over-supply of certain non-keeping varieties or difficulty in securing sufficient competent labour when required.

The development of fair-sized beds of rhubarb and asparagus, together with the establishment of 200 gooseberry bushes, in conjunction with the orchard, has been the means of creating a substantial and helpful income over the months of October, November, and December, when the orchard is still at a seasonal liability stage. Similarly, the poultry have been instrumental in considerably augmenting the farm income during that period when normally a fruit farm is non-revenue producing.

The marketing of all produce was at one time done at the farm gate. Customers either picked up their fruit, vegetables, eggs or poultry at the farm or made the necessary arrangements for Mr. Rumming to deliver them. Actually, this system still obtains for all classes of produce except eggs, which are now being crated and sent direct to an egg-floor in Auckland, usually twice weekly. There is no hawking of produce, and everything apart from eggs is disposed of locally.

Revenue and Expenses

The following figures represent the average gross revenue over several pre-war years:—

Fruit and vegetables ..	£401	1	10
Eggs and poultry	£213	4	3
Total	£614	6	1

During the war, and more especially in the past two or three years, returns generally have been appreciably higher than those indicated above, but it was considered unsound to use the higher returns, as they obviously are not a true index to conditions obtaining in normal times.

Average expenditure involved in the production of the gross revenue or income shown is as under, the same pre-war years being taken in each instance:—

	£	s.	d.
Rates	4	2	2
Insurance	7	19	1
Wages	133	13	10
General repairs and maintenance	13	14	11
Spraying materials	39	16	6
Fruit cases	8	4	2
Petrol and electric power ..	38	9	8
Manure and seed	54	15	4
Poultry feed, etc.	98	15	10
Sundry expenses	5	0	0
Total	£404	11	6

Comfortable Income

By deducting expenditure from revenue a credit balance of £209 14s. 7d. is established, which represents the owner's net income for an average pre-war year. Thus it will be seen that ten acres of land intensively worked have produced a weekly reward slightly exceeding £4. In addition, the owner has the advantage of a free house equivalent to at least £1 per week, and also a plentiful supply of free fruit, vegetables, eggs, and poultry. And as time goes on and the orchard comes to full bearing —it is not so at present—and the poultry side of the project is further developed, as it is quite capable of being, then the net reward must also materially increase.

One item in the above expenditure list, namely wages, is of some interest in that it indicates an average weekly pay-out of approximately £2 10s. over several years to outside labour. For such a small farm unit this is no mean achievement, and is a distinct benefit to a community of Maori people residing close by who are largely dependent upon wage earnings for a livelihood.

In all undertakings of this character it is only natural that labour costs should be relatively high in comparison with the size of the unit owing to there being so many essential jobs quite unfitted to mechanisation. Labour costs can, however, very easily wreck such an enterprise unless carefully watched the whole time. Realising this, Mr. Rumming has gradually mechanised every possible phase of operations, with the result that he now has a very fine range of cultivation, orchard spraying, and fruit and vegetable handling equipment, all of which is fully paid for and maintained in faultless condition.

Although this article is necessarily sketchy in detail, it is hoped that in broad outline sufficient has been written to demonstrate the soundness of Mr. Rumming's planning and management over the past 23 years, and also the economic possibilities attaching to the farming of a small holding.

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Attention is drawn to the fact that under the Regulations, any application which is received by the Board after the 1st May, shall not, except in special circumstances, be considered by the Board until after 1st May, 1946.

H. G. PHILPOTT, Registrar.

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VETERINARY NOTES

Suipestifer Disease in Pigs

A typical outbreak of suipestifer disease in pigs is described in the following account forwarded by an inspector of stock.

NO previous mortalities in pigs were recorded on the property. Twenty pigs were weaned and were apparently healthy, being fed on skim-milk. The grazing, however, was very poor. Some time afterwards a Tamworth boar of the same age as the others was purchased and turned out with the other pigs. All went well for a month or so, though now the owner realises that the purchased boar was unthrifty and never put on the same condition as the other pigs. Reviewing the history, one cannot set aside the suspicion that the boar introduced the disease, which no doubt found a fertile field for dissemination in the insanitary sties and surroundings.

The first noticeable symptom that things were amiss was evidence of apparent check, diarrhoea, accelerated breathing, nasal discharge, discoloration of skin, and loss of condition. The animals were immediately confined to their sties, where the symptoms became markedly more pronounced. The following morning two were found dead, and the matter was reported to the Department of Agriculture.

The post-mortem examination disclosed lesions indicative of suipestifer infection. Specimens were taken and forwarded to the Animal Research Station, Wallaceville, the examination there confirming the cause to be suipestifer infection.

In all, 14 pigs died, these being about three months old. The seven survivors appeared to be recovering slowly, but it is doubtful if they will ever be an economic proposition. In any case, they would probably remain carriers of the disease, and be a menace to future lots, if suitable precautions were not taken.

In this case the sties were discarded, the surroundings ploughed and limed, and kept free of pigs for a time. It should be noted that all the other pigs on the farm, which had never been in contact with the affected lot, remained healthy.

This report demonstrates the necessity for isolation of newly-purchased pigs until the owner is satisfied that they are free from disease. It also emphasises the value of isolation and segregation of pigs when there is an outbreak of disease on any property.

Paralysis in Pigs

Paralysis denotes complete or partial inability to use certain muscles because of interference with the nerve supply. In the conditions referred to here the muscles concerned are chiefly those of the limbs, more particularly hind-quarters, though to some extent all muscles are involved. There is imperfect control of the hind legs, resulting in a staggery gait, or perhaps in the hind legs being trailed on the ground. Paralysis is seen in fracture of the spine, in tuberculosis of the spine, and in vitamin A deficiency.

Fracture of the spine occurs mostly in mature pigs, such as sows, as a result of accidents or mineral depletion of the system. Sows which have just weaned a litter appear to be more liable to fracture, because of the removal of portion of the mineral matter from the bones during pregnancy and lactation. The paralysis resulting appears suddenly. The animal appears healthy, but is unable to raise its hindquarters from the ground. Treatment is not justified. A waiting policy may be adopted for a day or two, but if the diagnosis of fracture is reasonably certain, the animal should be slaughtered.

Tuberculosis of the spine is a rare cause of paralysis, but cases have been seen, again usually in mature pigs. The onset of paralysis is more gradual. Diagnosis of the actual cause cannot be made with certainty during life, but a positive reaction to the tuberculin test would provide some confirmation.

Paralysis from vitamin A deficiency is the most common type. In Australia a very comprehensive report on the condition was given by Messrs. Seddon and Frazer in 1927, though the cause was not then known. It has been noted more or less regularly in New Zealand. More recent work in the United States and at Cambridge has shown conclusively that deficiency of vitamin A is a cause. In New Zealand it occurs under conditions of feeding where this deficiency is very likely, namely, a skim-milk diet without any supplement of greenfeed or grazing of any kind. That cases of this kind are becoming fewer is probably a tribute to the improvement in the type of feeding and to the wider adoption of a sound open-air system, with regular access to good-quality grazing.

Affected pigs may be from 3 to 6 months old. Frequently they are in good condition. The first sign is unsteadiness on hindquarters, tendency to sag to one side, and for the pig to tumble over if it turns quickly. Later, power of the hind legs is lost to such an extent that the animal is unable to stand on them, and adopts a sitting attitude, or trails its hind limbs; the voice becomes shriller, and the pigs are more nervous. A post-mortem may show nothing amiss, though the large nerves supplying the hind limbs may be found on microscopic examination to be degenerated.

Treatment consists of supplying vitamin A, which can be done readily by giving fresh greenfeed, cod-liver oil, or whole milk. Where nerve damage is extensive recovery does not always follow.

Prevention is along the same lines.

◆

Gestation Table

Mares ..	340	days	from	date	of	service
Cows ..	283	"	"	"	"	"
Ewes ..	150	"	"	"	"	"
Sows ..	116	"	"	"	"	"
Bitches .	63	"	"	"	"	"
Rabbits	28-30	"	"	"	"	"

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1945-46 PRODUCTION TARGETS

Wheat - - - -	300,000 acres.	Onions - - - - -	2,000 acres.
Oats (for threshing)	60,000 acres.	Peas - - - - -	35,000 acres.
Barley (malting) -	38,000 acres.	Linen Flax - - -	20,000 acres.
Barley (feed) - -	40,000 acres.	Butterfat - - -	190,000 tons.
Maize - - - - -	12,000 acres.	Pig Meats - -	50,000 tons.
Potatoes - - - -	37,500 acres.	Other Meats - -	430,000 tons.

Increased production is urgently needed this year. Play your part. Plan now, and keep your plough busy.

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Issued by the New Zealand Department of Agriculture. E.I.S.AI

SEASONAL NOTES

Growing of Wheat

During the months of March and April preparation should be proceeding apace for autumn-sown wheat, and it largely depends on these operations whether or not our aim of 300,000 acres of wheat for the coming season will be reached.

IN the 1891-92 season, before refrigeration, New Zealand grew 402,200 acres of wheat. Since the eighties wheat growing has generally been confined to certain districts, in which it has become an integral part of the farm rotation, in order to spread the cost and labour with young sown grass and fodder crops. According to the latest statistics 234,000 acres were harvested in 1944, and of this 97 per cent. was grown in the South Island, mainly in Canterbury and North Otago.

As unfavourable seasonal conditions in Australia have seriously affected the position regarding our normal importations from that country, it is all the more essential that the maximum acreage should be sown in wheat this season. Our 300,000-acre target for next season should be attained, in view of the relative ease of harvesting the "header" wheats with modern equipment, the higher guaranteed price, and the urgent national need.

Suitable Soils

Wheat yields best on the stronger, fertile, well-drained land. Medium land in good tilth yields satisfactory crops, but growing of wheat on really light land is not recommended.

Winter-sown wheat is preferable in Canterbury and North Otago, May and June being the drilling months. Spring sowings are more usual in the North Island, and in some of the more southerly wheat areas.

Place in Rotation

Wheat follows rape, legumes, grass, potatoes, linseed, or cereals. Grass, rape, wheat is a popular rotation. Wheat grows well after clover.

Following peas, potatoes, or rape, discing may furnish a good seed-bed. Wheat after wheat is practised only on the heavier soils, and the second crop should be well manured. In view of the prevalence of "eye spot" disease, the growing of a wheat crop following wheat is somewhat risky in the south.

One cwt. of superphosphate per acre or its equivalent is allowed under rationing for all wheat sowings.

When wheat follows grass early skim ploughing should have been carried out and the land thoroughly worked prior to deep ploughing. When preparation has been delayed thorough preliminary discing to disintegrate the grass sod as much as possible to assist rotting should be the aim before deep ploughing. The cultivator should not be used when there is a risk of bringing undecayed grass clods to the surface.

When wheat follows grass or another cereal there is always a danger of grass grub infestation, but manuring with superphosphate will assist the young plants past the early stages, when they are most liable to be injured or killed.

The Seed-bed

The surface should not be worked too fine, or it will cake after rain. Small clods of earth on the surface are an advantage, particularly with autumn-sown crops, but the tilth should be fine and firm underneath.

Seeding Rates

Seed sown should be machine-dressed, plump, true to type, and should be suitably treated before sowing. The quantity per acre varies according to the climate, soil, locality, seed-bed, size of grain, germination, and the time of sowing. Spring sowings are usually 15 per cent. heavier than autumn sowings. In Canterbury autumn sowings are in the vicinity of 90 to 100lb. per acre. The heavier the land, the heavier the seeding; the lighter the land and the rainfall, the lighter the seeding. Seed is drilled every coulter and buried about 2½in. deep. The harrows usually follow the drill.

Wheat Varieties

Cross 7, which occupied 60 per cent. of the total wheat acreage harvested in 1944, has become the most popular variety, and, except on the lighter land, has largely replaced S.S. Tuscan. Tuscan acreage has dropped to 15 per cent. of the total. The yields of the two varieties are comparable, but the former, with shorter straw, is safer to grow on heavier Tuscan land, where S.S. Tuscan is liable to lodge. Both varieties are very resistant to shaking, but Cross 7 is earlier maturing, and the milling and baking properties are superior. Cross 7 also is the variety recommended for North Island autumn sowings, although for spring sowing in the western counties Tainui outyields Cross 7.

In Marlborough Cross 7 is probably the most useful general-purpose wheat; Jumbuck, which has the advantage of earlier ripening, is, however, not fit for heading, and it is essentially a spring wheat. On the light plains Fife Tuscan is probably the most suitable wheat, although it is not suited for the heavy flat country.

In Canterbury Cross 7 is the best variety for medium and good Tuscan country, and for the lighter type of Hunters country. For the lighter land Fife Tuscan is now the best variety, and it has proved to be on the whole a better yielder than Tuscan. It does not possess the stiff straw of Cross 7, and therefore should not be grown on the heavier types of land, where lodging may be expected. For the heaviest wheat-growing land Hunters is generally the best wheat, but Dreadnought has given much better yields in various places, and may be considered as an alternative to Hunters. Neither of these is fit for heading on account of loose chaff.

In Otago and Southland Cross 7 is the most popular variety. In North Otago, however, Dreadnought has consistently given higher returns on the heavier soils. Changing over to Cross 7 on these areas may entail severe losses in yield, which have to be balanced against ease and cheapness of handling. In the remainder of Otago and Southland the good yield, stiff straw, tight chaff, and early maturity of Cross 7 make this variety eminently suitable.

Seed Treatment

Wheat seed requires suitable treatment before sowing to control stinking smut. The modern method is by dusting with 2oz. to the bushel of organic mercury dusts, such as agrosan or ceresan. The treatment is usually carried out at the seed-dressing depots. The advantages of dusting are that germination is not adversely affected, the dusting can be done at any convenient time before sowing, the treated seed can be stored without injury, and there is no risk of re-infestation from sacks. The cost is somewhat higher than pickling with formalin or bluestone, both of which have to be applied shortly before the seed is sown. These treatments control stinking smut, but frequently injure germination and retard early growth. The only effective control of loose smut of wheat is by the hot water treatment, as the spores are inside the grain. The method is impracticable on the farm.

—*E. M. BATES, Instructor in Agriculture, Alexandra.*

Sprouted Grain for Seed-wheat Purposes

AFTER the damage inflicted on wheat crops by the recent floods farmers are interested in the question of using sprouted grain for seed-wheat purposes. Germination damage through sprouting varies, and the following article on the subject by I. D. Blair, Ph.D., Lincoln College, which appeared in the July, 1936, issue of the "Journal," is republished for the information of farmers who may be contemplating using sprouted seed for sowing. It shows that badly-sprouted grain has a poor germination, but that in commercial lines of seed the proportion of damaged grains may be only a quarter or less, and that the use of an additional 10 or 15lb. of seed may compensate for the lower germination.

THE 1936 harvest will long be remembered for its abnormal rainfall and the great difficulty encountered in saving the late crops. The fact that 9.5in. of rain fell between February 3 and March 14 in Canterbury, in comparison with 1.8in., the average for the preceding 40 years, indicates that flooding seriously hampered harvest operations. Apart from the delay in seasonal work, the majority of growers had the misfortune of seeing their crops severely damaged, with the grain sprouting in the stook, and in many cases in the standing crop. Many farmers have recently been concerned about the value of sprouted lines of wheat for seed purposes. One occasionally hears of farmers who state that they have grown good crops from sprouted seed, but it must be remembered that there are various degrees of sprouted wheat, and while one man may have been successful, others may have quite different results. The question of sprouted wheat for seed purposes has been investigated, and the complete results of the investigation are presented here.

Degrees of Sprouting

During the past season various degrees of sprouting were observed in affected crops. A number of ears with sprouted grain were collected from a crop in stook. Half of these were placed in a stack and left there for eight weeks. The other half was hand-threshed and the grain sorted out into four groups A, B, C, and D, according to the length of the sprouts. The description of the degrees of sprouting is as follows:—

Group A: All grains sprouted and showing green shoots over ½in. long. There was also great development of roots.

Group B: With green shoots ¼in. to ½in. long, and extensive root-development.

Group C: With small green shoots under ¼in. long and less development of roots than A and B.

Group D: With no sign of green shoots, but the shoot had just broken the surface of the grain. Roots were developed slightly in some cases.

The threshed grain was air-dried for different periods, and the laboratory and field germinations obtained. These are given in Tables I and II.

TABLE I—Laboratory Germination of Air-dried Sprouted Samples.

Group.		After 6 Days' Drying.	After 14 Days' Drying.	After 21 Days' Drying.	After 30 Days' Drying.
		Per cent.	Per cent.	Per cent.	Per cent.
A	.....	90.0	77.0	57.0	57.0
B	.....	90.0	84.5	60.0	59.0
C	.....	95.0	93.0	80.0	80.5
D	.....	97.0	96.6	95.0	94.0

TABLE II—Field Germinations of same Samples of Sprouted Wheat after 21 Days' Air-drying.

Group.		No. of Seeds sown per Row.*	Field Germination, sown February 25.	Field Germination, sown May 4.
			Per cent.	Per cent.
A	.....	100	22.0	4.0
B	.....	100	23.0	7.0
C	.....	100	25.0	11.0
D	.....	100	34.0	24.0

*Duplicate rows. Counts made 14 days after sowing.

From Tables I and II it is observed that as the grain dried out the laboratory germination decreased until constant after 21 days. The grain showing the least sprouting—viz., Group D—revealed a high laboratory germination, but when sown in the field the seedling establishment was low. The field germination of the other groups when sown at the usual time of autumn sowing—viz., early in May —was very low.

In the case of the sprouted wheat stacked for 8 weeks before threshing the germination results are shown in the following table.

TABLE III—Germination of Sprouted Grain after being in Stack for 8 Weeks.

Group.		Laboratory Germination.	Field Germination, sown April 4.	Field Germination, sown May 4.
		Per cent.	Per cent.	Per cent.
A	.....	58.0	11.0	3.0
B	.....	64.0	13.0	4.0
C	.....	83.0	16.0	8.0
D	.....	96.0	40.0	21.0

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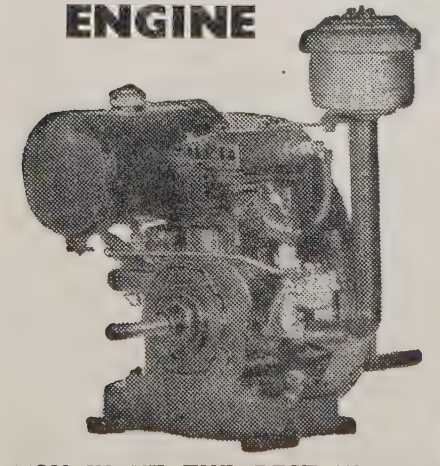

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In this case the field germination of the stacked sprouted wheat was slightly lower than where the grain had been air-dried, while the laboratory germinations were about the same.

Commercial Machine-dressed Seed

It must be realised that the data given above refer to seed in which all the grains were sprouted to some extent. Such a condition would not be likely to occur in a commercial line of seed-wheat—there the proportion of slightly sprouted grains (Group D) might be only a quarter or less. In addition, it is possible to remove the badly-sprouted grain from a line of seed by machine dressing. Several commercial-dressed lines of seed-wheat harvested from sprouted crops were examined, the results being shown in Table IV.

From Table V one concludes that the dressed commercial seed on the market, harvested from sprouted crops, has a lower germination capacity than seed harvested before flood damage, and that the laboratory germinations of these commercial samples are not unsatisfactory, and about 10lb. to 15lb. of seed additional to the normal seeding would make up for the lower germination.

Effect of Seed Pickling

In this trial a line of wheat and a line of barley machine-dressed, but harvested from sprouted crops, were examined. In each sample odd sprouted grains were noted. The seed was pickled as shown below, and the germination figures are shown in the following table:—

TABLE V—Effect of Seed Treatments on the Field Germination of Lines of Commercial Wheat and Barley Seed harvested from Sprouted Crops.

Seed Treatment.	Wheat. Per cent.	Barley. Per cent.
Untreated seed	75.0	88.0
Hot water	70 0	72.0
Formalin	14.0	40.0
Clark's wheat protector ..	55.0	82.0
Ceresan	79.0	87.0
Copper carbonate ..	77.0	88.0

The dry-dust pickles have had little effect on the germination of those sprouted lines of seed, while wet pickles, particularly formalin, have materially decreased the germination of the seed.

TABLE IV—Germination of certain Commercial Lines of Machine-dressed Seed-wheat harvested from Crops showing some Degrees of Sprouting.

Sample No.	Sprouted Grains in Dressed Samples. Per cent.	Laboratory Germination. Per cent.	Field Germination, sown April 1. Per cent.	Field Germination, sown May 4. Per cent.	Difference between Laboratory and Field Germination. (May).* Per cent.
1 (Tuscan)	10.0	91.0	88.0	81.0	—10.0
2 (Cross 7)	12.0	92.0	85.0	80.0	—12 0
3 (Tuscan)	—	90.0	86.0	80.0	—10.0
4 (Cross 7)	13.0	89.0	84.0	76.0	—13.0
5 (Tuscan)	—	87.0	80.0	75.0	—12.0
6 (Tuscan)	18.0	86.0	80.0	73.0	—13.0
7 (Jumbuck)	23.0	75.0	70.0	68.0	— 7.0
8 (Cross 7)†	—	100.0	95.0	92.0	— 8.0
9 (Tuscan)†	—	99.0	95.0	90.0	— 9.0

*Figures indicate the difference between field establishment, sown May 4, and laboratory germination.

†Samples 8 and 9 represented unsprouted 1936 seed from crops harvested and threshed before damage by rain.

◆

Autumn Management of Pastures

ON many farms it has been a common practice to allow the autumn growth of pastures to get away from the stock. The idea has been to use the roughage for winter feed at a stage when, however, it may be little better than inferior quality hay. On hill-country farms kept down by station cattle roughage provides the main winter maintenance ration while keeping the swards as much as possible in a state fit for sheep grazing. On farms capable of high production such a system, while easy to adopt, is unwise and unprofitable. Grasses that have run to seed stalk have a longer dormant period, with comparatively little leafy growth and less vigour. The swards tend to open up with ingress of weeds on the poorer grass cover.

A clean, green sward will be capable of providing more and better quality feed longer into the winter than pasture which has reached a state of maturity. Controlled grazing of autumn pastures, where necessary assisted by topping with the mower, encourages plants to stool out and cover the ground, and leaves the pasture in better shape to withstand the trampling of stock over winter.

Fields that have been cleaned up in rotation, topdressed early with phosphate, and harrowed to spread droppings before closing, will make fresh growth that is invaluable as a green bite, and would be rationed later in the season to supplement winter feeding.

With nitrogenous artificial fertilisers not available for topdressing under rationing, farmers might consider making use of the droppings under the woolshed or from the cowbyre as a topdressing for ryegrass paddocks late closed to promote a late growth of grass.

The critical period is undoubtedly early winter to early spring, and some form of intermittent grazing is essential at this time. Close and continuous grazing of ryegrass swards from now on weakens the ryegrass, delays a diminished, early spring growth, and upsets the ryegrass-clover balance. Ideal winter grazing of these pastures requires a sufficient concentration of stock to obtain quick, even grazing down to 2in. Any closer grazing greatly prolongs the recovery period, actually results in a smaller overall bulk of feed, and has as its aftermath a poorer sward in the spring. Farmers who provide ample supplies of hay and ensilage for winter feeding, and who are not under the necessity for adopting close grazing during the winter period, generally benefit in the spring by having vigorous ryegrass-white clover swards.

E. M. BATES, Instructor in Agriculture, Alexandra.

◆

MAKING GOOD HAY.

THE introduction of new types of machinery in agriculture has resulted in a very definite speed up of operations and as a rule a considerable reduction in costs, but unfortunately both of these desirable achievements have been at the expense of quality. This is particularly so in the case of hay. There can be little doubt that the old though cumbersome and perhaps costly way of making hay in the cocks resulted in real hay being made and not merely dried grass being saved. To some there may be little difference in the two products; to others (and particularly to the livestock that have to eat it) there is a vast difference. Real hay is "made" by sweating it in the cock and this making is a reality and not just an imaginary business. However, progress can hardly be halted in order to go back to the old-fashioned method of hand-cocking all the hay, but much can be done in the way of careful windrowing to ensure that some sweating takes place. This season much good potential hay has been wasted through inclement weather, but the few old-fashioned farmers who really cock their hay have been able to save it in really good condition.

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ORCHARD AND VINEYARD

Grading and Picking of Fruit

FRUITGROWERS' time during April will be almost entirely occupied in harvesting, packing and grading the apple and pear crop, and submitting it to the assembly depots for inspection. Careful consideration should be given to a suitable programme in order to ensure that no particular variety will become too mature for cool storage or orchard storage.

Grading

The grading standards as provided for in the New Zealand-grown Fruit Regulations, 1940, with modifications as advised, should be strictly adhered to. These standards cannot be considered difficult to comply with, and by strictly observing the requirements for the respective grades there should be very little adverse criticism from the consumers. If there is any doubt the advice of the officer in charge of the inspection depot should be sought.

The introduction of "Minimum" grade allows the grower to market a certain amount of fruit which in past years has not been acceptable in any of the other grades. It should be clearly understood, however, that it is not intended to include all sound fruit, irrespective of the amount of black spot, hail-mark, severe cracking, etc., and growers are advised to make themselves thoroughly conversant with the requirements of this grade by studying the regulations and extensions, and by attendance at grading demonstrations.

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Picking and Packing

For local marketing conditions fruit can be harvested at a more advanced stage of maturity, except where it is intended for cool storage. Fruit for cool storage should be selected from the main picking, which should not be delayed. During mid-season several varieties may require attention at the same period, therefore the harvesting programme should be carefully considered.

In Nelson and northern districts the main picking of Jonathans should begin about mid-March and possibly a little later in the south. It is often necessary to break into the picking of Jonathans to take a first picking of Delicious, and from this picking most of the fruit required for cool storage should be selected rather than placed on the market in competition with Jonathans. After the main picking of Delicious the balance of the Jonathan crop should be harvested, as they will have reached a stage of maturity where there may be a risk of ripe-spot development and dropping.

It may be necessary to use reconditioned cases extensively again this season. Where such reconditioning is done, any faulty timber should be discarded. Only strongly-made cases will withstand the many handlings necessary before the fruit reaches the markets. All previous markings must be removed before second-hand cases are repacked with fresh fruit.

The principal objective in packing fruit is to get it from the packing shed to the consumer in the best possible condition. Both packing and grading must therefore be up to standard. Irregular sizing and loose packing are frequently causes for rejection and should be avoided. All varieties of apples and pears should have adequate protection against bruising, more particularly the softer dessert varieties of apples.

Fruit intended for orchard storage should be graded and placed back into clean cases, preferably paper-lined. It should be stacked in a cool, well-ventilated place, but should not be subjected to strong draughts. Orchard-stored fruit should be inspected periodically and any rots immediately removed.

Shed Hygiene

All reject fruit should be disposed of immediately, as it is likely to develop fungal rots. Moreover, the grubs from codling-moth infected fruit will escape and take cover in orchard cases, to remain a source of infection for the following season. The greatest infestation of codling-moth is often found in fruit trees situated close to packing sheds, indicating that most of the codling-moth infected fruit from the orchard is accumulated at the packing shed, and unless destroyed there remains a concentration of carry-over larvae at that point.

The grading table and bins should be cleaned down every night with a stiff brush to remove grit, dirt and accumulations of stalks which would cause unsightly markings on the fruit and often skin punctures.

Filling Orchard Gaps

Growers should check up on blank spaces in the orchard and place their orders for the required trees with reliable nurserymen at the earliest opportunity, as there is at present only a very limited supply of suitable fruit trees in the Dominion. Consideration should also be given to the replacement of badly stunted and unprofitable trees.

—*D. HOGG, Orchard Instructor, Mapua.*

Citrus Notes

Diseases of Tree Trunks

THE two fungus diseases, bark-blotch (*Ascochyta corticola*) and collar-rot, are annually responsible for the loss of many citrus trees in New Zealand by killing the bark around the trunks. With bark-blotch, main limbs are also subject to attack, while collar-rot is more frequently found near ground level. Susceptibility to attack increases with the age of the trees. Both diseases require a wound, no matter how small, to enable them to enter the tree. Near ground level wounds are readily caused by tools, such as a push hoe, whereas higher up the tree bark injury is more often caused by the boots of workers when climbing trees during picking or pruning. The injury caused by the common tree-borer (*Aemona hirta*) is also frequently responsible for the entry of bark-blotch. In either case the borer gains entry through the dead bark killed by either of these fungi. The diseases are much more common in lemons than in other citrus fruits. Trees growing in poorly-drained areas are particularly susceptible to attack by collar-rot. The heaping of cut grass, animal manure or soil against the trunks also increases the danger of infection.

Infection is not readily detected until the foliage begins to assume a yellow colour, and it is then frequently found that the disease has developed to such an extent that control measures are no longer economic. It is suggested that where the infection has extended for more than one-third or one-half around the tree trunk, the tree should be removed and the infected portion burned. Lesions may be successfully treated by carefully cutting away all discoloured bark, which should be burned, and by painting the wound with either Bordeaux paste or acidulated mercuric chloride 1-1000. When the bark begins to callous all around the wound, indicating that the disease has been successfully eradicated, the treated area should be coated with a heavy grade of petroleum jelly or other suitable material.

Citrus Verrucosis

Verrucosis on citrus takes the form of scabby, yellowish, fawn or light brown lesions. These are raised, varying in size from pinhead or less to about half an inch in diameter, and sometimes cause large, wart-like distortions with a scabbed area on the apex. On the foliage infection generally takes the form of conical pimples or fawn-coloured scabbed areas.

Verrucosis spreads from old infections to very young fruits and leaves. These become progressively resistant with age, and practically immune when leaves are an inch wide or fruits about one inch in diameter. Although mature leaves and fruits are immune from infection, old lesions remain viable and will continue to expand regardless of host maturity.

The disease is readily controlled by applying Bordeaux mixture 3-4-50 when young fruits or leaves are forming. The success of the spray depends largely on making the application when the blossoms are mainly at the petal-fall stage, as this is the most susceptible period of growth for infection. For grapefruit and mandarin, spring and early summer applications are generally sufficient to ensure a clean crop, but with lemons an autumn application of Bordeaux is also essential in infected orchards. This should be made at the petal-fall stage of the earliest main autumn blossoms. The Meyer variety of lemon is much more susceptible to attack by *verrucosis* than the standard varieties, and it is much more inconsistent in its blossoming periods. All trees of this variety seldom blossom at the same time. These two factors generally make it necessary to spray Meyer lemons more frequently than the other varieties. It should be remembered that the immature Meyer fruits are readily injured by Bordeaux spray when the mixture is applied at a greater concentration than 3-4-50.

Handling Lemons

Special care should be taken in handling new season lemons, because young fresh fruits are particularly susceptible to injury from rough treatment. The outer oil cells of the rind of young lemons are more tender, and the skin covering is less pliable than that of older fruits. Slight bruises and scratches readily injure the surface tissue and enable the various fruit-rotting fungi to gain entrance. This danger is most pronounced in fruit harvested just after a rainy period when the tissues of the lemon are in a particularly turgid condition.

Injury should be reduced to a minimum by keeping field boxes and picking bags free from dirt, twigs, etc. The over-filling of picking bags, especially when using a ladder, is a common cause of injury to the fruit. Where possible, do not transport lemons until 24 hours or more after picking, to allow the skin to toughen.

—P. EVERETT, *Orchard Instructor, Kaikohe.*

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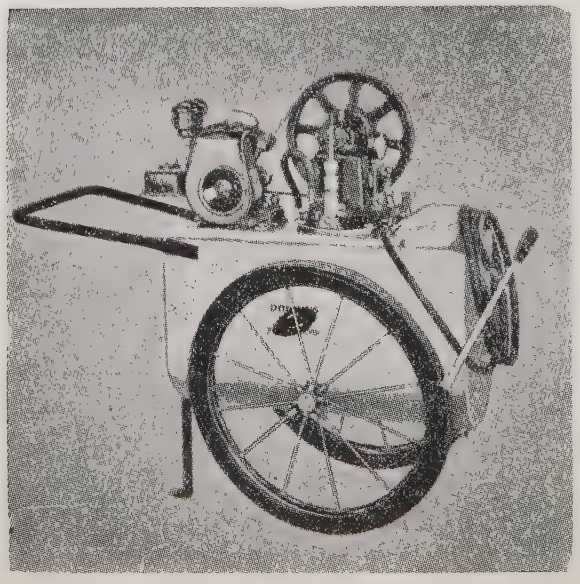

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HOME GARDEN NOTES

Work for April

Experience has to be paid for; there are no bargains in gardens.
—Anonymous.

EXPERIENCE in vegetable-growing in the home garden during the past season has, in many instances, been dearly bought. The vagaries of the weather during the growing period prevented maximum crops being obtained. Unseasonal conditions have brought discouragement to many a beginner. Late frosts in some districts caused damage to tender plants, beans and tomatoes being the crops particularly affected. Later, hail—fortunately of rare occurrence—caused some crop damage, commercial as well as home gardeners suffering considerably.

Rain, too, at inopportune times delayed seed-sowing and transplanting, so that crops were not harvested during the normal period.

Despite disadvantages and disappointments, the satisfaction obtained from the production of even a small proportion of one's own vegetables should encourage further effort. It would be worth while, therefore, to consider fully why, under present-day conditions, there should be no relaxation of the endeavour to produce all the vegetables required in the household.

Statements from responsible quarters indicate that the demand for food supplies to vast concentrations of service personnel will be as great in the immediate future, if not greater, than at any time during the last few years. It must be evident that vegetables—fresh, if possible—will play a major part in maintaining the health of those for whom supplies are asked, and upon whose well-being and physical fitness so much depends.

As far as the home gardener is concerned, the best contribution that can be made is by giving as much attention as possible to the area being cultivated as a vegetable garden.

Tomatoes

In most home gardens the supply of tomatoes begins to lessen in April. This, in part, and according to location, is mainly due to lack of proper care of the vines. Spraying may have been neglected; the removal and destruction of diseased plants, if any, might not have been attended to promptly, resulting in the probable spread of disease. On the other hand, heavily-producing vines require additional plant foods, which should be supplied in some form or other, so that the remaining fruits may be brought to maturity before frosts take the crop.

Nor should the plants be "murdered" by the removal of the leaves. All foliage possible should be retained on the plants, and, during the latter stages of growth, some of the finest fruits will be picked where foliage protection is greatest.

During April, before watering the plants heavily, good drainage should be assured.

Kumeras

Kumeras should be carefully dug before frost destroys the vines and probably some of the tubers.

To "cure" kumeras after digging they should be left on the ground. At night they can be gathered together in small heaps and covered with the vines which have been removed before digging. Exposure during daytime is necessary, so that the tubers may become properly ready for storage. This procedure is necessary for several days.

If intended for storage, kumeras should be handled as carefully as apples, and all damaged or bruised specimens retained for immediate use. Storage is carried out in much the same way as for potatoes, but the tubers should be adequately protected from frost.

Spring Cabbage

In districts where Flower of Spring is grown as a cabbage for early spring cutting planting should take place not later than mid-April; March is better in Canterbury and further south. Only well-grown plants, which have been properly hardened off, should be set out. When seedlings have been grown in a glasshouse or in a frame with glass protection they are best planted earlier, because of the risk of a severe setback. If early spring cutting is desired, the plants should be well cared for both before and after transplanting.

The area chosen for planting should be sheltered and have good drainage, and, if possible, a northern or north-easterly aspect. Warmth from the early morning sun is an advantage for the young plants.

Blood and bone manure and superphosphate, 2 parts of the former to 1 of the latter, is a good and safe fertiliser to use if broadcast over the bed at the rate of 6oz. per sq. yd. and worked into the soil before setting out the plants. Planting distances will vary, but 12in. each way will be adequate if, when harvesting, every alternate cabbage is cut in the rows. This system of cutting permits full development of the plants allowed to remain.

Asparagus

There is usually a great temptation during April to cut back the tall-growing foliage which should abound on a healthy and vigorous asparagus bed. This should on no account be done, as it is by and through this top growth that next season's production of spears is assured. Weeds should be kept down by hand pulling and shallow hoeing.

Rhubarb

It is almost certain that the rhubarb bed will require attention during April. All weeds should be removed, and if well-decayed stable manure is available, a heavy dressing of this can be applied and dug in during the process of turning over the soil be-

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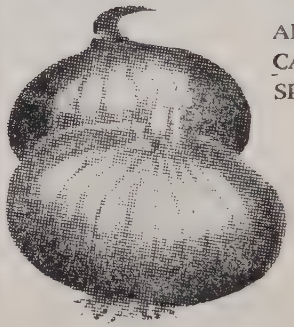

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tween the rows and the roots. Blood and bone manure can be used with advantage for rhubarb, and should be applied liberally. Fowl manure and well-rotted cow manure are also suitable for application. Fresh cow manure should not be used, particularly on heavy soil. As many feeding roots are near the surface, careful digging between the rows is at all times necessary.

Potatoes

The haulm of the main crop should have completely died down now, and no advantage is to be obtained by allowing the tubers to remain in the ground after they are mature. During periods of excessive rain they are liable to serious damage by rotting and by starting second growth. The latter trouble will affect those tubers which might otherwise be suitable for seed. If any winter green vegetables have been planted between the rows, careful digging of the crop should be carried out without delay.

Winter Greens

Winter green vegetables should comprise late savoy cabbage, broccoli, kale, and silver beet. Kale will probably be fit for use after the cabbage and broccoli are finished. For that reason, except if it is wanted early, forcing with a nitrogenous fertiliser is not advisable. Should the fronds show signs of becoming yellow, watering with a solution of nitrate of soda, 1oz. to 4 gals. of water, will assist in restoring normal growth. During winter no nitrogenous fertiliser should be applied to silver beet.

Leeks and Celery

The principal requirements of leeks and celery during April will be rigid weed control and weekly applications of liquid manure. If the celery is required to be blanched, this should be attended to from two to three weeks before it is intended for use.

Early Spring Carrots

From mid-March to mid-April is an opportune time to sow carrot seed for use in spring. Chantenay or Early Short Horn will be suitable varieties, the latter growing only to 3½ to 4in. In good, friable soil Chantenay will give excellent results.

To grow carrots successfully from seeds sown as recommended above, a raised bed is almost indispensable. It has these advantages:—All work—seeding, weeding, thinning, and hoeing—can be carried out from the sides of the bed; the soil will not become "set" by treading on it; it will afford efficient drainage during what is probably the wettest period of the year.

For this sowing rows need not be spaced more than 9 to 10in. apart, and sufficient space should be allowed on each side of the bed to prevent the soil falling away from the roots as they develop in the outside rows.

When the area to be used has been turned over, and before the final preparation of the bed, it would be an advantage to broadcast 2oz. superphosphate per sq. yd. This should be thoroughly worked into the soil before sowing the seed. Sowing should be carried out sparsely, and less coverage is necessary than when seed is sown during late spring or summer.

Broad Beans

Because this crop thrives best during cool weather, seed may be sown any time from April onward, although May is generally the month when seed is sown in home gardens. A shallow trench 3 to 4in. deep and 6in. wide, if squared at the bottom, will permit the seed to be placed in a double row 4 to 6in. apart, no seeds being set opposite each other. This method, if adopted, will permit better development of the plants during the growing period and stabilise them during stormy weather.

STORAGE OF VEGETABLES.

Marrows, Pumpkins, and Squash should all be harvested before frost damages them. Gourds are all frost-tender, and any specimens which have been injured in this way should be used early, as they cannot be successfully stored. Nor will gourds keep well in storage unless they are properly matured, an indication of which

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is the condition of the vines. These should have died down completely. The skin of the gourd should be hard and the fruits themselves free from cracks or bruises.

Where shed room can be spared it will make good storage accommodation, provided damp conditions do not obtain and plenty of air is circulating. A basis of straw would be an advantage. Gourds may be stored quite well under trees if placed clear of the ground and where frosts will not reach them.

Potatoes: Early morning on a bright, windy day is the best time to dig potatoes for storage. After digging they can be allowed to remain until properly dry, but they should either be bagged before night or covered to protect them from the depredations of the potato tuber-moth. The haulm should never be used to cover the potatoes; this is best burnt, as it may be infested with tuber-moth. Potatoes can be kept in good condition for a considerable time if put in sacks and stored in a dry, cool place.

Tubers intended for seed should be specially selected and kept apart, subsequently being transferred to sprouting boxes.

Carrots: Where the crop has not been attacked by the carrot rustfly, and provided the area occupied is not immediately required, carrots may remain where they are growing. They will keep well provided the land is well drained and not too heavy. If removal is desired, they can be stored in bags or in plenty of moist sand. Only specimens free from damage should be stored. The principal thing to remember in storing carrots is that the moisture content of the roots must be retained. If this is not done, they will shrivel and become useless for cooking purposes.

Swedes should not be allowed to become over-mature before harvesting. Put in a box raised a few inches from the ground and placed on the southerly side of a live hedge, where they will not be exposed to the sun and drying winds, properly-matured swedes will keep well and retain their flavour for several months. They are a valuable winter vegetable and worth the trouble of storing. Moderate frosts will not injure them.

Parsnips: These keep excellently where they are growing, but should be lifted before showing a tendency to run to seed in spring.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

DON'TS

DON'T select potatoes for seed from unhealthy plants. This is merely a means of spreading disease.

DON'T take any tomato for seed just because it looks nice. Only fruits true to type, picked from vigorous, disease-free plants should be selected for seed.

DON'T denude tomato plants of all their foliage. The foliage is necessary to protect late-maturing fruits and prolong harvesting of the crop.

DON'T let the vegetable garden down. By producing valuable crops it will show its gratitude for all the attention and consideration it receives.

Temperature

Water boils at 212° Fahrenheit and freezes at 32° Fahrenheit or on the Centigrade scale boiling point is 100° C., and freezing point 0° C. Both the Fahrenheit and Centigrade scales are in common use, though the recording of temperatures in scientific investigations is usually made in degrees Centigrade. The New Zealand meteorological temperature records are, however, recorded on the Fahrenheit scale and every degree F. below 32°F., or freezing point, is reckoned as one degree of frost.

To convert a Fahrenheit reading to a Centigrade reading first subtract 32 then multiply the remainder by $\frac{5}{9}$ while to convert a Centigrade reading to a Fahrenheit reading multiply degrees Centigrade by $\frac{9}{5}$ then add 32.

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NOTES FOR BEEKEEPERS

The Removal of Surplus Honey

In removing surplus honey care should be taken to cause the least disturbance of the bees. Robbing is very easily started, and once started, is extremely difficult to control. Honey should be removed early in the morning, and the work completed before the warmth of the sun has stirred the bees into activity. Escape boards are ideal for the removal of honey, but good-fitting hive material is essential for their successful operation. Poor-fitting lids or twisted supers may lead to robbing.

If hives have been manipulated to give extra ventilation for the summer months, they should now be restored to their normal position. It is not advisable to reduce the entrance until the season is so far advanced that the throwing out of the drones has been completed.

Honey for Wintering

The amount of honey to leave for wintering has always been a problem for most beginners, and where a light crop has been harvested there is always the temptation to take off more than one should. Once the work and worry of heavy supplementary feeding in the spring has been experienced greater care is taken to see that ample stores are left on the hives or held in store for that specific purpose. Many colonies die of starvation through their owners believing that, because the bees are left in two storeys, they must have ample stores. In the autumn the bottom super usually has a comb or two of brood in the centre, and the rest of the combs in that box are filled with pollen. Above, in the second super, there are several more combs of brood, so that actually the colony has only four to five frames of honey for winter and early spring requirements. This is definitely not sufficient to allow for safe wintering. Checking colonies by lifting one end of the hive for weight is therefore not at all reliable. To be reasonably sure of successful wintering each colony must have at least eight full frames of honey. The locality of the apiary has a definite bearing on the amount of stores required to be left on the hives. Sheltered areas, where early spring flora can be relied on, will help to reduce to a minimum the amount of stores required for safe wintering. For average localities nothing less than 40lb. of honey should be left.

Honey for I.M.D.

Beekeepers who, under the marketing regulations, will be supplying honey to the Internal Marketing Division should ensure that their honey reaches the depot in the best condition possible. Special attention should be given to the straining of the honey, and ample time allowed in the tanks for settling and skimming before tinning up.

For Local Consumption

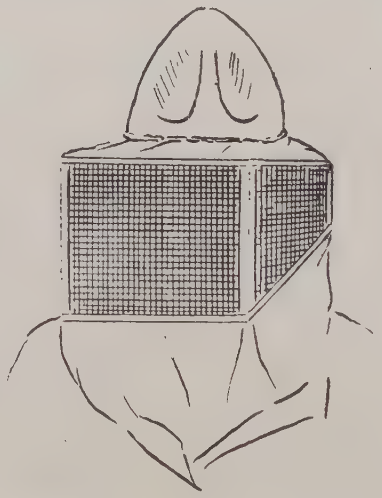
Most beekeepers find that they have a good local demand for their honey. Care should always be taken to study the consumer demand and to see that the honey goes out in the condition most suited to give thorough satisfaction.

Liquid Honey

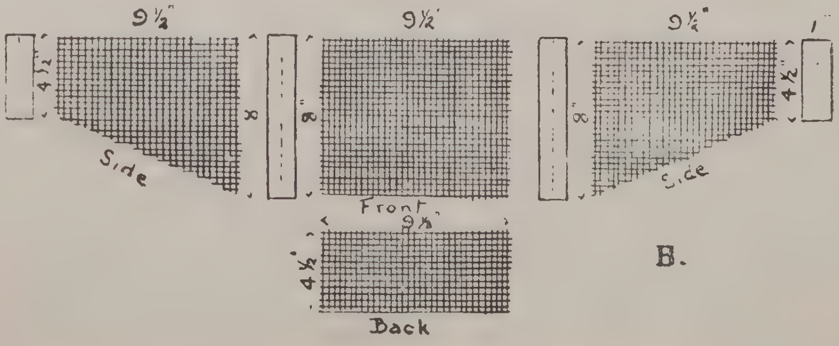
Honey remains in a liquid state for varying periods after extraction, according to the floral source, temperature, and the addition, intentionally or otherwise, of dextrose granules that hasten granulation. Liquid honey, when first packed, appears very attractive, but after a time it may begin to granulate with a very coarse grain. In this condition it does not have the same appeal to consumers. Heating the honey by placing the container in hot water will return it to its liquid state, but many consumers are not prepared to do this. In selling liquid honey, therefore, only the amount that will be used up before granulation sets in should be supplied.

Granulated Honey

Honey should be granulated before large-scale deliveries are begun. Granulated honey, if properly sealed to exclude air, will remain in this condition for a considerable period, and the consumer will receive it in its most attractive form, even after many months of storage. Some honey granulates of its own accord very rapidly, and when this occurs the grain of the honey is usually very fine. The honey secured from rata trees generally granulates very quickly, and is of smooth grain. Honey which takes a considerable time to granulate invariably has a coarse grain. Beekeepers who wish to place their honey on the market with a fine grain should study the principles governing granu-



A.



B.

lation. Dr. E. F. Phillips, a prominent authority on honey in America, explains granulation as follows:—"Honey, being essentially a mixture of solutions of the three sugars, behaves somewhat unlike any one of the three sugars in single solution, yet on the whole the behaviour of the sugars is typical of each. Dextrose, being a quickly granulating sugar, usually begins to form crystals in a short time. Sucrose is present in honey in small amounts, and such a weak solution does not quickly form crystals. Levulose, being a non-crystallising sugar, remains in solution. When crystals form in honey it is the dextrose which is taking crystal form, while the other sugars remain in solution."

Granulation

The coarseness of granulation varies considerably, and is often a puzzle to the beekeeper. Dextrose crystals are irregular in form and, if formed quickly, are small. If crystal formation proceeds slowly, the crystals first formed increase in size. The coarseness of granulation is therefore governed by the speed of crystal formation. Fine crystal formation is increased by moderate stirring and by temperature changes.

The following points govern fine-grained granulations:—

1. Incorporate fine-grained honey into the liquid honey. This honey is usually termed starter honey, and the proportion added is generally about 5 per cent.

2. Thoroughly stir to make sure the starter honey is mixed with the liquid honey. Avoid creating excessive air bubbles in the honey.

3. When the honey is packed and sealed, 57deg. F. to 60deg. F. is the best temperature for rapid granulation. As this low temperature is seldom experienced until autumn, it will be understood why disappointing results are often encountered when rapid granulation of honey is attempted by the beekeeper during the warm temperatures of summer.

NOMINATE US!

Nominate us to ensure for you, regular supplies of the lines now being rationed by the Wheat Committee. The present regulations apply to all poultry keepers, backyard or commercial.

Don't panic by killing off your birds unnecessarily — you can make sure of your feed supplies by nominating us and writing or calling in for a Feed Supply Form. Now is your chance to put our modern, cheerful and willing service to the test. Nominate us, fill in your Feed Supply Form and we will attend to the rest on your behalf.

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Phone 41-735. P.O. Box 1778
Telegrams: "ROWALLAN,"
Auckland.

Bee Veil

Many beekeepers during the past season have experienced great difficulty in securing material suitable for a bee veil. In the past wire gauze was extensively used in various types of veils. It was never altogether satisfactory, as the cut edges of wire were always a nuisance, while breath condensation on the front portion of the veil very soon caused rusting. A new form of gauze known as plastic gauze is now available. It does not have the disadvantages associated with a wire veil, and is very pliable and appears likely to give reasonable service. As this plastic gauze is much dearer than wire gauze, it is quite possible that it may become difficult to secure in the near future now that the wire gauze is again available.

To assist those who wish to make up a veil of this material the accompanying sketch and dimensions are given:—

A shows the veil in position over the hat and the lower portion tucked in under the coat. Light material, such as strong muslin, should be used for the cloth portion of the veil. The top piece is 4in. in length after the hem for elastic or a cord is sown up. The lower portion is approximately 20in. long. These two pieces of cloth are stitched on to a binding machined on to the gauze.

B gives the dimensions for cutting the plastic gauze. These pieces are joined together by strips of strong calico. Two strips are joined together lengthwise down the centre, and then the edges of the gauze are placed into position between the two flaps of calico and sewn together. This can be sewn on the sewing machine without undue risk of breaking needles.

To improve vision through the gauze place the front piece on a sheet of newspaper and with a stencil brush give the piece a coating of quick-drying black paint. See that only a very thin coat is applied, otherwise the small squares may become blotched and greatly retard vision. The remaining three pieces are best left unpainted, in order to keep the veil as cool as possible.

C. R. PATERSON, Apiary Instructor, Hamilton.

DEPARTMENT OF AGRICULTURE

NOTICE TO BEEKEEPERS.

The attention of beekeepers is drawn to Regulation 6 of the Apiary Registration Regulations, 1937.

Under the above regulations it is incumbent upon all beekeepers to notify the office of the Director of the Horticulture Division, Department of Agriculture, Wellington, not later than **December 31** each year, of any increase or decrease, as the case may be, in the number of hives kept at each registered apiary on **December 1** of that year.

Every person failing to comply with the requirements of the regulations is liable on conviction to a penalty not exceeding £20.

Those beekeepers who have not yet attended to this matter are now requested to do so **as soon as possible**, to enable the apiary register to be brought up to date.

W. K. DALLAS,
Director of the Horticulture Division.

Among the 5000-odd varieties of grapes there are some that will ripen in almost any sunny spot in New Zealand. "Vines for Home Gardens," Bulletin No. 164, available free from offices of the Department of Agriculture, shows that grapes can be grown in any garden which has a well-drained soil and receives plenty of sunshine.

CIRCULATION MEANS LIFE

RAILWAYS NATIONAL RESPONSIBILITY

Railways are linked to the war by the nature and urgency of the burdens they carry; they are part and parcel of the vital service of supply on which our fighting men depend, and throughout the war years they have helped to provide the circulation that means life to the Nation. Some day Peace will be here and dark days left behind. Then the Nation will look back and judge the fibre of New Zealanders as a people on the courage and will with which they faced their years of trial. The railways are working now so that when the war at last is won they can, in full knowledge of a job faithfully discharged, look forward with confidence to finer things ahead.

Protection Today — Progress Tomorrow.

POULTRY KEEPING

Shortage of Food for Poultry

By
F. C. BOBBY,
Superintendent of the Poultry Industry, Wellington.

THE present shortage of essential foods for poultry is as unfortunate as it was unforeseen. It is causing concern among commercial poultry producers and back-yard poultry-keepers alike. A call for increased production coincident with the granting of a subsidy upon all eggs passing through authorised egg floors some 10 months ago resulted in a marked response last rearing season, and many producers, particularly in the North Island, have increased pullet flocks now entering upon their first laying season. There has been no abundance of poultry foods for several years past, and temporary shortages have occurred in a number of districts—again mainly in the North Island. There is little wonder, therefore, that consternation occurred when it was realised that with increased flocks there was every indication of decreased supplies of food. The situation was aggravated by the first news of a coming shortage being made known just before the Christmas holidays, when the food situation normally becomes difficult, owing to mills closing down for holidays and the annual overhaul.

Not the Only Sufferers

The first scare now being over and the situation having steadied down appreciably, it is possible to take stock of the possibilities for the future and to review what is being done to assist the industry. In the first place it is necessary to view the situation on a broad basis and recognise that poultry keepers are not the only group of primary producers who are going to feel the adverse affects of the drought in Australia and the consequent severe curtailment of supplies of potential stock foods from that country. Furthermore, in the present difficult circumstances, while poultry producers may rightly expect to get full consideration in regard to their requirements, they cannot expect that all the foods available and upon which they are dependent for feeding their poultry will be reserved entirely for the poultry industry. Some appear to have overlooked this fact in their anxiety to safeguard their own and other poultry producers' futures. Meals suitable for poultry are required also for pigs, calves, and town supply dairy herds, and their needs cannot be denied. In view of what has happened, it is unfortunate that the pig industry as a whole did not respond more readily to the £5 per acre crop subsidy scheme, and some pig farmers may yet regret opportunities lost.

Again, to many who have little or no knowledge of the complexities of distribution it appears that some form of food control should be instituted overnight and the whole situation retrieved immediately. Controls are neither easy to plan nor easy to operate, and are invariably unpopular. If endless work and disruption are to be avoided, it is necessary as far as possible to avoid interfering with the normal channels of distribution.

On the other hand it has been apparent to all who know the workings of the poultry industry and its possible available food supplies that the present situation is being seriously aggravated by the maldistribution of food intended for poultry. The New Zealand Poultry Board, after carefully reviewing figures placed before it by the Wheat and Flour Controller, formed the opinion that if equitable distribution of the available supplies of wheat, pollard, and bran were effected throughout the Dominion, the industry would not suffer unduly. **On the other hand it was clearly recognised that no further expansion of the industry should take place until greater supplies of food again become available.**

Distribution Committees

While priority has been granted to poultry keepers in regard to supplies of pollard and bran, and every effort is being made by the Wheat and Flour Controller to see that apparently adequate supplies reach districts wherein poultry are kept in quantity, it is obvious that weaknesses exist in the final stages of distribution. Accordingly the New Zealand Poultry Board obtained approval to set up Poultry Food Distribution Committees at the principal points of distribution. It is intended that these committees shall consist of producers and representatives of the trade responsible for handling poultry foodstuffs. These, together with the Wheat Committee's representative for the district, are charged with ascertaining what quantities of food are required by the poultry keepers in the area covered. Such information—not previously known—is to be placed before the Wheat and Flour Controller for his necessary action. Inequalities of distribution within the district will also be investigated by these committees. It is easier to describe on paper the functions of these committees than it is to get them running smoothly and efficiently. Much work will have to be done before these committees become of real value to the industry, and nothing will be gained by impatience at this stage.

While the policies adopted by these committees will have to vary according to district, certain basic facts upon which the committees will work may be discussed. The committees will generally be concerned first with the distribution of pollard and bran. Importations of stockmeal have ceased until further notice. There are satisfactory indications that supplies of wheat will be adequate, and this is not likely to be a serious problem in any district. If, however, difficulties do arise, it is anticipated that the local Poultry Food Distribution Committee will assist in seeing that what is available is equitably distributed. Although ample supplies are anticipated, it must be remembered that where meals for mash mixing are in short supply the drain on wheat supplies will be increased considerably. Only time will show what will be required to adjust the situation.

To implement the running of this scheme all registered poultry keepers will be expected to nominate a merchant to supply their requirements in pollard and bran, and will be expected to draw only from this source of supply. This is essential if equitable distribution is to be effected. Those who do not carry out this requisite and those who have flocks of over 25 birds but do not register their runs cannot grumble if they find themselves in difficulties. They have only themselves to blame. Furthermore, it must be recognised that these committees can only attempt to see that producers get a fair and equitable share of the food that becomes available from time to time. This amount may not be a full ration, but at least it will be a fair share of what is available. More cannot be done.

The situation is being complicated seriously by poultry producers registering more birds than they own—the sole reason being to obtain more food than the quantity to which they are entitled. Where this is suspected committees will reduce the allocation made to such producers until the latter take steps to substantiate their registration figures

and satisfy the committees accordingly. Allocations of food will generally be through nominated merchants on a basis correlated to the number of birds registered.

Back-yarder's Supplies

So far mention has been made only of registered poultry keepers. For obvious reasons consideration has been given to back-yard poultry keepers, or those with less than 25 birds. Committees will be responsible for advocating that certain quantities of food (pollard, bran, and wheat) be set aside for this class of poultry keeper. Food will be made available to merchants preparing mashes and selling them in small quantities for the use of small producers. Back-yard poultry keepers must realise that full use will now have to be made of household scraps and grain. They cannot reasonably expect to receive an allocation as great as that supplied to owners of large flocks. Such men cannot augment their supplies with household scraps, and since their livelihood is dependent upon their poultry, it is obvious that these commercial producers should receive first consideration. Furthermore, the back-yard poultry keeper depends to a large extent upon the commercial poultry farmers for the replacement of his birds, and this fact must not be overlooked.

WHEAT SUPPLIES.

The position regarding supplies of wheat for poultry producers has deteriorated since this article was written. While everything possible will be done to assist producers, it is imperative that food supplies should be conserved and unproductive birds culled out of all flocks.

It will be some time before the present food difficulties are smoothed out. Individual producers are experiencing and will continue to experience trouble in obtaining adequate supplies of food. Accordingly all those who are meeting real trouble in this regard are recommended to get into touch immediately with the Poultry Food Distribution Committee serving their area. The following list gives the centres at which these committees have been set up:—**Auckland, New Plymouth, Wanganui, Palmerston North, Wellington, Blenheim, Nelson, Masterton, Hastings, Gisborne, Christchurch, Timaru, Dunedin, and Invercargill.**

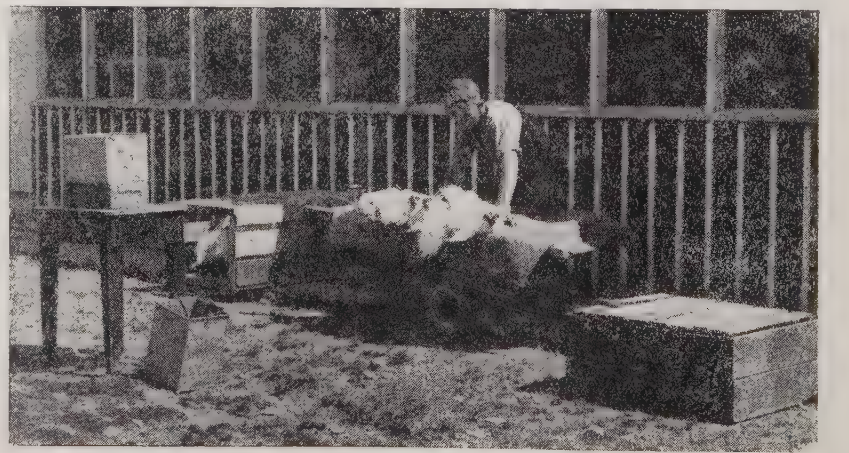
Finally, here are three points which must be considered while the present situation lasts:—

1. **It is not safe to increase flocks until the situation improves. Similarly it is not recommended that new plants be established.**
2. **Consistent and severe culling has never been more necessary than at present. Only productive and healthy birds should be retained.**
3. **Everything possible should be done to conserve food supplies and to prevent losses of food from vermin and inefficient feeding equipment.**

Blood Testing for Pullorum Disease

THE value of blood testing adult stock for pullorum disease as a satisfactory method of controlling this disease in young chickens is now being recognised. Each year the number of birds tested in the Dominion is increasing, and more poultry farmers are calling for assistance in this direction.

Blood testing means additional work for the producer, but also places a heavy strain upon the services of officers of the Department of Agriculture. The season when the majority of the testing is carried out is a limited one, which means that a large number of poultry farmers are all requiring their flocks tested about the same period. It is obvious, therefore, that poultry instructors and others authorised to conduct this test require the maximum co-operation in order to get this work completed as efficiently and quickly as possible. Poultry farmers are anxious to co-operate in this regard, but are often unaware of what the test entails and how best to prepare for the visiting officer. With a view to assisting all concerned, a photograph is reproduced here showing clearly the more important equipment required at blood-testing time.



The speed with which the work can be completed depends largely upon the amount of labour available at the time for catching the birds to be tested. The poultry instructor should be left free to take blood samples from the birds' combs and to carry out the test itself. He requires a steady flow of birds being brought to him all the time, and should not be required to round up and catch birds.

The following equipment is necessary for easy testing:

1. A small table—firm on its legs—upon which to place the testing oven. Hot water is required for this oven, which, once filled, is kept hot throughout the testing by a methylated spirit lamp.

2. One or more crates in which to put birds that react to the test and are carrying pullorum disease. Sound crates are required for this job, and these birds must not escape to become mixed up again with the healthy or non-reacting birds.

3. An additional crate or truck (as illustrated) covered with a sack upon which the birds actually being tested are held and rested. Note that someone is required to hold these birds until the test is completed—a matter of a very few minutes for each group of birds tested.

These are the essentials. Much valuable time is saved if these are all ready to hand when the tester arrives. If in addition the birds to be tested are shut in, all will get a good start to the day. Poultry producers are particularly requested to co-operate by carrying out these simple instructions.

YOUNG FARMERS' CLUBS

Organisation's Ambitions Reviewed

By S. Freeman, Organising Secretary,
N.Z. Federation of Y.F.C.

YOUNG Farmers' Clubs have met with sufficient success in the past year to encourage us to believe that the movement has weathered the storm. We have been able to take advantage of the improved conditions generally, and, by reviving old clubs and forming new ones, we have increased our total until we now have close on 100 active clubs, with the prospect of many more during the coming season. With the return of a number of members from overseas, and with the younger generation of country youth, we have been able to begin our "revival" operations at an earlier stage than even the most sanguine of us a year ago would have thought possible.

Basis for Rebuilding

To many outside the organisation it may appear that we place too high a value on our Young Farmers' Clubs movement. My answer is that it should be realised that our movement is a national one—the only organisation catering directly for the young man on the land. While its aims and objects are mainly directed towards agricultural instruction and education, it goes far deeper than that. It should be remembered that the youth in the town or city has his social clubs, his institutes, his sports clubs, and his opportunities of adult education, and the development of cultural tastes. To the young man in the country his Young Farmers' Club represents all of these—and more.

In the minds of those who have the welfare of the nation at heart and an understanding of the problems of the rural community there can be no doubt as to our movement's potentialities, particularly in post-war reconstruction. The foundations of our movement are deep-rooted in the soil, and we can congratulate ourselves on the fact that, in spite of all past and present difficulties, we have been able to preserve at least the framework of the Y.F.C. organisation. And now, with victory and peace in sight, we have something tangible upon which to plan our rebuilding.

I use the words "movement" and "organisation"; in a broad sense, perhaps, these words are interchangeable. I was, however, once impressed by a remark that the word "movement" was preferable to "organisation," as "organisation" did not necessarily imply **"advancement."** With this I am to a certain extent in agreement; nevertheless, I claim that we cannot have **advancement** without **organisation**, and that **organisation** should be the keynote of the Young Farmers' Clubs movement, for without complete and thorough organisation we cannot have advancement and progress.

Huge Post-war Aim

Prior to the war, with our 200 or more clubs and 6,000 active members, doubtless many of us—particularly those directly concerned with the welfare and administrative side of the movement—felt that we had really accomplished something; but all that fades into insignificance alongside the task we must set ourselves for the future.

In normal times there are over 50,000 young men between the ages of 14 and 30 engaged in rural occupations, and before we can contemplate our work with satisfaction we have to enrol at least 25,000 of these young men as members of our movement. Twenty-five thousand—over four times as many members as our organisation embraced before the war! This, on the basis of pre-war memberships, means approximately 800 clubs, with an average of about 30 members apiece! This may seem a huge objective, but I am sure it is not an impossible one. However, it can be achieved only by organisation in the fullest sense of the word.

The suggestion that while the war has caused our movement many a set-back, it may have hastened, or at any rate made easier, the winning of our goal is not the paradox it may appear. The difficulties and handicaps of the war brought out the best in us, and have been responsible for bringing forward the latent energy and resource so necessary to overcome them. Our confidence in our movement has been more than justified—it has been morally strengthened, and we are able more than ever to appreciate its worth. Our work during a most critical period has not been in vain, and the movement is now well on the highroad to recovery.

The goal of 25,000 members in 800 clubs may seem unattainable, but I consider it quite a possibility, and a goal at which we should aim, right from the word "go"—and that word has been given now! We are already reviving many of our old clubs and forming new ones.

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Interest Younger Members

We should try to avoid mistakes of the past, such as that made by many clubs in neglecting their younger members, failure, in some cases, to organise and enrol the under eighteens, or the tendency to concentrate on activities of more interest to the older members, to the gradual exclusion of the juniors. Admittedly the age limit—from 14 to 30 years—permits of a very wide range, but a club whose executive officers realise their responsibilities should arrange matters accordingly, and make even more provision for the interest of the younger than the older members, who in turn should realise their own responsibilities to the juniors and to their club.

The formation of Young Farmers' Clubs in district high schools and secondary schools has been a move in the right direction, and should have taken place on an extensive scale much earlier. Had this matter been seriously tackled in, say, 1936, our membership could have been doubled by 1938.

There are also many localities throughout both islands where no serious attempt has yet been made to establish the Y.F.C. movement. Again, far too many clubs set too high a value on big membership and spectacular display. Three comparatively small clubs covering a district are better than one large one. Figures relating to attendances will bear this out. Many of the older clubs with memberships of 80 or over seldom held meetings at which the attendance was more than 25 to 30, whereas smaller clubs, covering a more limited area, would often have close to 100 per cent. of their members at meetings and other activities. By splitting up the larger clubs we can get greater coverage and more members, and also overcome many of the transport difficulties, some of which were apparent even in normal times. With closer units we can create greater interest, the spirit of friendly rivalry can be more easily engendered, and co-operation can be taken full advantage of.

We have an efficient organisation, which, if we expect to make progress, we should exploit to the full. If we set to work with a will, we can build up our Y.F.C. movement so that it will become a tremendous asset.

Our movement, through its democratic organisation, its progressive policy, and its co-operative spirit, can do much for the young man of today who is the farmer of tomorrow—and can do even more in the way of assisting back to their way of living those who have served overseas. On behalf of the Y.F.C. Federation I make this appeal to all members and friends, and to all units of our organisation: We intend to institute this autumn a drive for increased membership and the complete revival of the Y.F.C. movement. Pull your weight and assist us, and so assist yourselves.

Y.F.C. Memorial Scheme

IT was definitely decided at the last annual general meeting of the Y.F.C. Federation (last July) that a national Y.F.C. Memorial would be undertaken. Clubs and district committees have been asked to discuss the matter and to submit recommendations as to the form that the memorial should take. So far very few proposals have been received. The special sub-committee appointed by the federation will be bringing down recommendations to the Dominion executive committee at an early date, and it is essential that proposals should be submitted as soon as possible.

Clubs and district committees are asked to consider this matter immediately and to communicate their ideas to the secretary of the sub-committee, Mr. W. P. Nichol, Te Matai Road, Te Puke, Bay of Plenty.

The original proposal from the Bay of Plenty suggested that the memorial should take the form of an acknowledgment of gratitude to the Mercantile Marine, and that a fund be established to educate sons of merchant seamen, up to officer rank, killed in the war.

Among the few other proposals received are various suggestions of scholarships and bursaries for Y.F.C. members and their dependants. The memorial is to be a national one, and should concern all units of the federation. As a certain amount of money has already been collected, it is considered that the type of memorial should be decided at an early date; following this a campaign can be started for the collection of the amount aimed at.

Annual Meetings

Clubs and District Committees

CLUB secretaries and chairmen are reminded that the annual meetings of clubs should be held during March. It will be appreciated if reports of these meetings are forwarded to the **Organising Secretary, Y.F.C., P.O. Box 112, Palmerston North.** The reports should contain the full list of officers elected, number of members present, etc., and copies of the clubs' annual reports and balance sheets will also be of interest.

It is necessary for secretaries to send in to headquarters as soon as possible after annual meetings a revised list of their clubs' members, giving full postal addresses; this is required for "Journal" distribution purposes, and also in order that a complete membership roll of the organisation can be kept. These lists should be addressed to the **Organising Secretary, Y.F.C., P.O. Box 3004, Wellington,** as they are attended to in the Wellington office. It should be understood that monthly copies of the "Journal of Agriculture" will be sent to all active members whose names and addresses appear on these lists. In this connection it should be noted that advisory members are not considered "active" members, and are thus not entitled to receive the "Journal" at the Y.F.C. concession rate of 1s per annum. Back copies of the "Journal" are not now available, owing to the acute shortage of paper. The "Journal" subscriptions of club members expire on April 30, and in order to ensure that members receive their copies of the "Journal" promptly it is necessary for the new membership lists to be forwarded to Wellington as early as possible.

The annual meetings of district committees should be held during April, and the annual meetings of the councils during May. This arrangement is necessary to provide a continuity of annual meetings—first those of the clubs, then the district committees, and then the councils, and finally the annual meeting of the federation in June or July. This enables the delegates to be appointed in correct order, and any important business to be passed on from one body to another.

22nd. Motor Btn. Y.F.C. (Overseas)

THE following extracts from letters from Pte. C. B. Anderson, hon. secretary, 22nd Motor Btn., Y.F.C., will be of interest to readers:—

SINCE its inaugural meeting the 22nd Motor Btn. Y.F.C. has held eight very successful meetings. The club has been popular and a useful form of recreation. To date meetings have been held with the following speakers and subjects: Mr. Forbes-McHardy, "Rehabilitation on Our Return"; Pte. Geo. Jackson, of Waiorongomai, "Farming Stud Romneys"; Cpl. Ancrum, "Pig Farming"; Pte. Sauer, "The Field Bakery"; Mr. Cooper, "Animal Breeding"; Pte. Ian Kay, "Cocksfoot"; Pte. J. Johnston, "Friesians." Besides these talks two evenings were devoted to "quiz sessions," which proved very popular.

A number of our members are taking farm correspondence courses through the E.R.S. on such subjects as "Animal Production," "Grasslands," etc., and finding them very interesting and useful. I am taking the course on "Wool," which will be very helpful to me later on; actually, to get the most out of it a more practical experience with the wool itself is necessary. However, as with the other courses, nothing but good can result, and it enables spare time to be put to good advantage.

We are running into another winter now; no one is looking forward to it, but here's hoping that it won't be so bad. One thing, it's the same for everyone! Lately it has been wet, and on this low coastal country of the Lombardi Plains it gets pretty sticky.

Fruit for Troops

The fruit season is now at an end, but we have done full justice to it while the opportunity lasted. The grapes were very small in the early and middle stages of growth, but summer and autumn showers filled them out in good style.

They grow the best tomatoes I have ever seen in this country; a lot of them are used for conserve, which goes with the staple diet of the people. They boil them first and then let the mulch steep in a barrel. A bung-hole is opened in the bottom after a day or so and a green fluid is drawn off. The remainder is then put through a machine like a mincer, and the skins, seeds, and fibrous material separated; the thick conserve is then bottled.

Normally fruit is packed in small "chips" and marketed, but in the war zone lately acres of fruit have just gone to rot. A good apple is something I haven't had, but of course I may not have been in the right area at the right time. For instance in our present area there are very few olives, which is quite unusual. The apricots were good in the early part of the season, and some of the peaches also. There has been a good variety of pears.

Quaint Harvest Methods

The wheat harvest is a bit of a circus in some cases. The small farmers who grow an odd acre or two among the fruit trees and grape vines have it cut by a gang of women and boys with sickles. It is left out for a few days and then taken in or put into a small stack. After gathering the sheaves they go over the area and glean every single straw that has been left. There is usually a circular brick or concrete area near the house where the grain is threshed with a flail; the grain is then cleaned by a laborious method of winnowing with a shovel, aided by whatever breeze is blowing. With the larger areas binders are frequently used and the grain is stacked in the normal way. The amusing part, however, is the threshing. This is done by a small wooden mill driven by a steam engine. These mills are drawn from place to place by white oxen. They go into action with all and sundry on the job. At one place I counted 26 in the gang, which is a pretty fair average. It must be said that the mills turn out some good work, and no daylight is wasted while the season is on. The straw, as with hay and any other forage stacks, is stacked around a stout pole, which is set well into the ground. When finished the stacks are certainly a picture to look at. The straw is used for bedding the stock down.

Italian Livestock

Most farmers have from two to five or six cows or oxen, and some have one or two cows of a dairy breed somewhat similar to the Jersey. The stock are all housed on the ground floor and the family lives upstairs. The Italians generally have a very poor conception of hygienic drainage, and would greatly benefit by a little education in such matters. Many of them have a few sheep, and in some cases quite large flocks. The sheep are not of a very good type; they are something on the lines of our halfbred or Corriedale, and have plain faces. The wool is of a Down type, of quite good texture and soft handling. One flock—or two or three flocks on the one property—was nearly a thousand strong, and the ewes were all hand-milked in the evening.

Italy is a mountainous country with a lot of steep, rocky land and great expanses of rolling country. North of Rimini it widens out in a broad plain known as the Po Valley (named after the main river) or the Lombardi Plains.

I am delighted to know that the Y.F.C. organisation is still on a firm footing. I am kept well informed of farming topics at home through the various journals and weeklies which I receive, and also by correspondents. I see that in my old district the clubs are going very well. I expect that men returned from the Islands will boost things along in most cases. We had the misfortune to lose Alan Viles (Apiti Y.F.C.) a while back, and he is missed by all. I see Geoff Blatchford (Masterton Y.F.C.) fairly often. We were all interested to note that J. Munro (Gisborne Y.F.C.) had gained the D.S.O. I think our organisation has a very wide representation in the field.

Pte. Anderson is a good correspondent himself and would welcome letters from any members who can find time to write to him. In a more recent letter he states: "We have settled down again in a handy spot and hope to have a few more meetings. We have already held one, the speaker being Sgt. Basil Johnston, who spoke on 'The Standard Romney Flock.' Lt. Mac Cooper is still with us. I priced a horse the other day; only 60,000 lire, which is equivalent to £150 sterling! The same style of horse would make about £15 in New Zealand. An ass mare was valued at 30,000 lire. It is quite a job getting bullocks shod; they are put in a crush and tied by the head and forelegs, and a sling is fixed round the brisket. The hind legs are then tied in turn and a flat plate the shape of each toe is nailed on."

Bill Anderson was formerly secretary of the Bulls Young Farmers' Club, and will also be remembered as one of the stalwarts on the Wellington Y.F.C. Council. We wish him the best of luck and a safe return.

MANPOWER FOR THE ARMED FORCES.

FARMING and industry are being called upon to provide more manpower for the Armed Forces. The men will be selected from those who are Grade 1 and held on appeal. Primary Production Councils have been asked to assist Appeal Boards so that the selection of the men will result in the least dislocation to agricultural production. It is expected that the men will be replaced by soldiers returning from overseas soon after next season's production begins.

Lecture Brevities

"ANIMAL DISEASES": Dr. Seigel

"THE annual loss of stock in New Zealand amounts to approximately £16,000,000, and if this could be reduced by only £4,000,000, it warrants co-operation between the farmer and the skilled veterinarian," said Dr. Seigel, of Pukekohe, when advocating support for the veterinary club movement at a meeting of the East Tamaki Young Farmers' Club.

Dr. Seigel emphasised the necessity to feed a well-balanced ration through the winter months in order to combat prevalent nutritional diseases, including milk fever paralysis and acidosis. Milk fever, which was caused by a shortage of calcium, could be largely prevented by the practice of drenching cows with a calcium drench. He also advocated an injection of calcium in preference to the inflation of the udder, which might introduce infection. Acidosis, he explained, was responsible for much of the undesirable flavours found in milk and cream in the early spring. It was due to a flush of grass which was short in carbohydrates, and he advocated balancing this by feeding good hay and molasses.

Dr. Seigel described the various aspects of abortion, sterility, internal parasites, and other prevalent diseases, and said the veterinarian could not replace judicious feeding, but could only assist in the maintenance of healthy stock.

—L. Gubb, Hon. Sec., East Tamaki Y.F.C.

* * *

Y.F.C. Broadcasts from 2ZA

ON account of the popularity of the radio broadcast session sponsored during part of last year by the Wellington Y.F.C. Council over Station 2ZA, Palmerston North, the council has made further arrangements for a weekly 15-minutes' session to be broadcast from that station every Friday evening at 8.30. About 5 minutes will be occupied by announcements on behalf of the council, district committees, or clubs within the Wellington Council area, and the rest of the session will comprise talks on agricultural and Y.F.C. topics. The Organising Secretary, Mr. S. Freeman, who is at present acting secretary to the Wellington Y.F.C. Council, is arranging the session, which should prove of interest to club members within the Wellington area and to members and others throughout the Dominion.

Reports on Club Activities

MANAWATU.

Apiti.—Short talk on the Air Force by Mr. K. Stanley. Address by Mr. E. Hemmings, "Lumbering in England"; the speaker also covered the subjects of "Farming," "Rationing," and the "Blitz of London." There was an attendance of 14 members out of a total membership of 35.

Bunnythorpe.—The chairman, S. Anderson, was congratulated by members on his election as a delegate to the district committee, and also on his appointment as a Y.F.C. representative on the Palmerston North Junior Chamber of Commerce. Donation of 10s. to club funds by E. Hodgson. Lecture on "Concrete Posts" by Mr. J. O'Brien. Eleven members present.

Pohangina Valley.—Dance committee to be set up; a social to be held at an early date. Address by Mr. A. J. Galpin, formerly district Y.F.C. secretary for the Manawatu, "Just a Young Farmers' Club." Twenty-two members present out of 28.

WANGANUI.

Bulls.—Letters received from members overseas acknowledging parcels sent during the past year. The meeting welcomed an overseas member, A. Torrey, just returned from the Middle East. The secretary was instructed to write to the R.N.Z.A.F. Station, Ohakea, concerning instruction in the release of pilots from crashed aircraft. Members urged to be present at the forthcoming Marton A. and P. Show, to take part in the stock-judging competition. A very instructive demonstration was given by a club member, S. G. Avery, on the "Fundamental Points of Soldering." Mr. Avery is chairman of both the Wanganui district committee and the Wellington council; he is also vice-president of the federation. There was an attendance of 12 members.

Marton.—Letter of appreciation received from Marton A. and P. Association for the help given by members at the recent show. Report by chairman on meeting of district committee. Statement regarding district stock-judging competition; abandoned at the Marton Show, but to be held at Taihape in May. Presentation of senior debating trophy to the club. New sub-committee appointed to deal with arrangements for district sports meeting to be held at Rata. Preliminary selection of teams. Question of holding a field day deferred to next meeting. Date of annual meeting finalised. Address by Mr. K. A. Williams, solicitor, Marton, entitled "Some Aspects of Law Which Apply Particularly to Farming"; the speaker gave a very interesting talk dealing with some common and statute law problems. He also gave a brief outline of the main points in debating. There were 11 members present out of 38.

SOUTHERN HAWKE'S BAY.

Ballance.—The resignation of the treasurer, H. Ebbett, who is leaving the district, was regretfully accepted; agreed that the secretary should act also as treasurer until the annual meeting. Address by Mr. Dalgleish, veterinary surgeon, on "Diseases in Cattle." Eleven members in attendance out of a total of 20.

NORTHERN HAWKE'S BAY.

Meeanee.—Letter received from the Onga Onga Sports Club. One new member enrolled. Address by Mr. Outram, supervisor, District Pig Council, on "Diseases of Pigs"; the speaker also exhibited photographs of prize-winning pigs and carcasses. Ten members present out of 20. At the previous meeting a discussion took place on the prospects of holding a sports meeting during the coming year.

Wairoa.—Circular from the federation dealing with production read to the meeting. Attention of members drawn to the Women's Division patriotic shop day. Lecture by Mr. Ivan Outram, supervisor, Tairawhiti Pig Council, entitled "The Pig Industry in New Zealand"; the speaker dealt with feeding, housing, and management, and also outlined the scheme whereby Young Farmers' Clubs will be represented on the District Pig Council in the near future. Ten members present.

BAY OF PLENTY.

Kati Kati.—General business. The chairman reported on the recent calf judging held in the school grounds. Eleven members present out of 28.

Waimana.—General business. Brief discussion on a suggested tour of Great Britain after the war. Delegates appointed to the local school calf clubs as follows:—Nukuhou School, J. T. Cain and P. Clarke; Waimana School, D. Woolfield and Dick White. Eight members in attendance out of 20.

Welcome Bay.—Sports meeting to be held to raise funds for patriotic purposes. One new member enrolled. Reports on recent dance, which had proved both a financial and a social success. Special committee set up to arrange for a dance to be held in Hayman's Hall. Short discussion on the assistance to be given to the Tauranga A. and P. Association at its annual show. Mr. J. C. Hammond (advisory president) gave an instructive and interesting lecture and demonstration on "Fencing." The speaker answered many questions. There were 14 members present out of 25.

AUCKLAND.

East Tamaki.—Arrangements for lectures, etc., at future meetings. Talk by Mr. H. Ferguson (advisory president) on "How to Conduct a Meeting." Eighteen members present out of 44.

Pukekawa.—Business meeting. Reports from delegates who attended the district committee meeting. Report from social committee on the recent concert from which the club benefited to the extent of £11 14s. It was decided to hold a field day dealing mainly with sheep; details of this were left in the hands of the committee. One remit passed for consideration at the next district meeting Twelve members in attendance out of a total of 24.

Another Air Force Y.F.C.

"A YOUNG FARMERS' CLUB has been formed in this area after some persuasion on my part," writes F/O. J. Billings, hon. sec. Y.F.C., R.N.Z.A.F., N.Z.A.P.O. 366 "An agricultural reference section is being built up in the library here for general reading for members and for the preparation of lectures. Please could you send a set of bulletins published by the Department of Agriculture? We are proposing to start a poultry unit here, so bulletins on poultry farming would be extremely welcome. Any literature you could spare would be greatly appreciated."

The bulletins have been forwarded to F/O Billings, and it is suggested that any members who have spare copies of literature that might be useful to the club should send these also; in any case it is certain that correspondence with club members in New Zealand would be welcomed.

* * *

THE GOOD NEIGHBOUR

Seedtime and Harvest

I LOVE the autumn. The days have a sheen about them, a richness all their own. Each season brings its special meed of gifts, but none can rival seedtime and harvest for splendour. No wonder the ancients portrayed Autumn as a goddess carrying a horn of plenty, which overflowed with fruits and flowers, and paid tribute to her bounty by means of annual festivals—

"Presume not the ripened grain to reap,
Till crowned with oak in antic dance
ye leap,
Invoking Ceres, and in solemn lays,
Exalt your rural queen's immortal
praise."

Our ordinary tasks at this time of the year bring us into closer touch with Nature. When we "sweep fallen leaves over a lawn spun with gauzy spiders' webs; watch the slow lavender smoke of a bonfire; taste apples cold with dew lying fallen in the orchard grass; smell the earthy smell of flower-pots and seed-boxes and dry geranium leaves and creosote; gather blackberries in the golden sunlight and press their juice from a heavy jelly bag with a wooden spoon; walk across the fields in the evening until dark, searching for the moonglow of the first satin-smooth mushrooms," we cannot help but be aware of the great earth-forces which are unceasingly at work all around us.

Autumn bestows rewards for past labours. The ripened grain is like "an ochre mat on which the sun may in glory lie" (to quote Dame Laura Knight), the orchards are heavy with fruit, the gardens yield their goodly crops, and the bees store the sweetness of the flowers against the dark days of winter. One of the most satisfying things about Autumn is her lavish use of colour. Although the majority of our native trees remain green all the year round, they form a perfect foil for the many deciduous varieties which have been introduced into the country. Oak and sycamore flaunt banners of russet, the maples flame like sunset fires, and lighting every willow branch are slim crescent-moons of gold. Even the bramble stems are bronzed almost to a purplish hue, the brier bushes are decked with coral, and the berries of the hawthorns glow like the ruby-tears of the merman in the old Eastern legend. It may well be said: "The woods are more splendid than a royal pavilion, and each tree has spilled about its feet a pool of coloured leaves wherein, like Narcissus, it admires itself."

Yet in the midst of all this grandeur there is a note of sadness, for much of this colour is "the beauty of death, of those who die that life may go on living. The leaf surrenders its life to the enfolded, sleeping bud and becomes by such dying, beautiful." Here is the way one writer describes this aspect of Autumn:—

"God in His heart made Autumn for
the young;
That they might learn to accept the
approach of age,
In golden woods and starry saxifrage,
And valleys all with azure mists
o'erhung.
For over death a radiance He flung,
That thus the inevitable heritage
Might come revealed in beauty, and
assuage
The dread with which the heart of
youth is wrung.
And for the consolation of the old
He made the delicate, swift, tumul-
tuous Spring;
That every year they might again be-
hold
The image of their youth in every-
thing,
And bless the fruit-trees flowering in
the cold,
Whose harvest is not for their
gathering."

As we contemplate the wonders of Autumn it is fitting that we consider the cycle of our own growth, not in the physical sense, but where the mind and spirit are concerned. Are we endeavouring to live up to our ideals? Are we using our talents to the full? And most important of all, are we sowing the good seed of love and kindliness wherever we go that those who come after may reap a happier and more glorious heritage because of our striving towards spiritual maturity?

Mary

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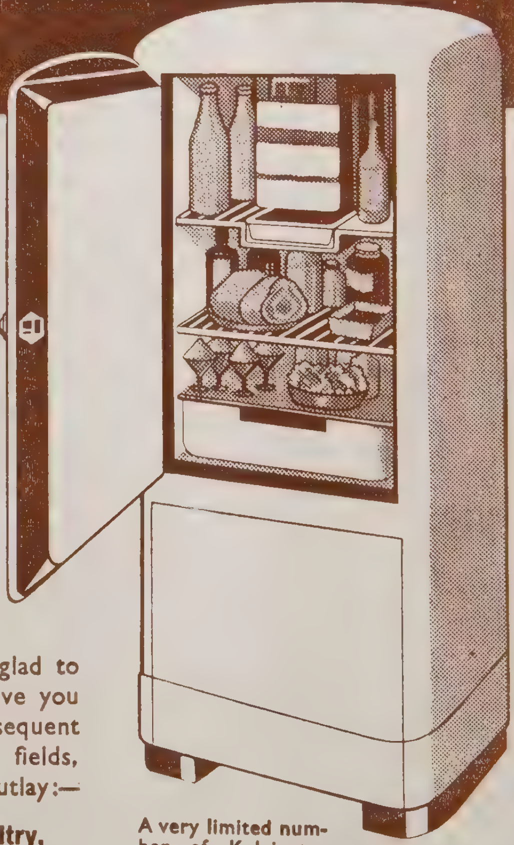

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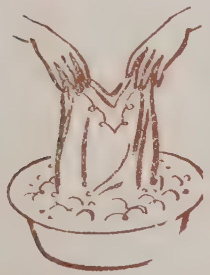
How to Look After Rayon

NOWADAYS our clothes must last longer—we must "make do and mend." Washing and ironing play an important part in the life of all fabrics. Rayon, for instance, can be washed time and time again, and very simply, too. This is because it soils only on the surface, with the result that rayon fabrics or garments or stockings can be quickly and easily restored to their original freshness and loveliness.

Washing



Use warm water and see that the soap is thoroughly dissolved and whisked into a good lather. Dip and squeeze thoroughly in the suds without rubbing or wringing — the dirt will come away easily. Rinse two or three times (without wringing or twisting) in order to remove all traces of soap. After the final rinsing squeeze the material and then roll in a towel to dry off excess moisture. If hung up to dry, see that the garment is opened out in order to distribute the wet weight and to avoid uneven drying. Coloured rayons should be dried at once and never left bunched up. When drying out of doors choose a shady place, not direct sunlight. Wash any specially dirty marks before putting the whole garment into water.

Wash rayon stockings daily. Dry thoroughly but don't iron. Rinse a new pair before wearing for the first time.

Ironing

Before ironing pull the garment gently into shape. If it has become too dry, rinse it through again. Never sprinkle rayons with water, as patches will occur.

Use a warm (not hot) iron. The correct temperature can be tested by standing the iron on a newspaper for 15 to 20 seconds. If the paper scorches, the iron is too hot. Rayon should be ironed on the wrong side and only one thickness at a time, taking care not to press buttons or fastenings into the fabric. Seams should be pressed thoroughly dry or they may contract and spoil the shape of the garment.

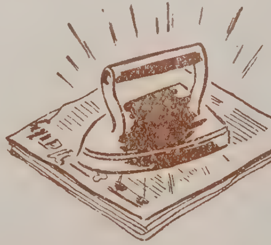
You will see at a glance at the following how the different surfaces should be treated.

Drill and suede finish rayons.—Iron nearly dry.

Rayon marocains. — Iron fairly damp, stretching the material both ways as you iron—to counteract a temporary shrinkage in washing.

Rayon georgette.—All georgettes have a tendency to shrink when wet, so iron on a well-padded board, stretching the fabric gently both ways as you iron.

Rayon satin.—Iron on the wrong side when fairly damp, then finish very lightly on the right side.



Knitted rayons.—If ironing, do so when almost dry, and across the garment first, in order to prevent dropping.

Flannel-type spun rayon.—Press with a damp cloth when nearly dry.

Linen-type spun rayon.—Iron fairly damp.

When Mending

Never patch old material with new if you can help it. If you do use new, however, wash the patch piece first.

Cut out all the good parts of a worn garment and keep them for patching.

If a garment splits at the seam don't just try sewing up the seam again; that will only make the garment tighter, and if it has split, it is probably a little too tight anyway. Put a small patch down the seam instead—a scrap of ribbon is a very good thing to use for this.

Mend any hole or thin place as soon as it appears. Very large holes in the foot of a stocking should be patched rather than darned. Use a piece of an old stocking, lay it on the wrong side of the stocking that is to be mended, and "herring bone" the edges down on both sides.

And Making Do

The tops of nightdresses usually wear out first. Cut the skirts down into slips or knickers.

Camiknickers that have gone at the top can be cut down into knickers. And those that have gone in the legs can be cut off just below the waist to make what used to be called a "chemise." You will find that a "chemise and knicker" set made from two old camiknickers will give you a great deal more wear.

Convert a slip into camiknickers in this way. Cut the slip to the right length, using the odd pieces to make a rectangle about 8in. x 4in. Seam round the rectangle. Sew one end across the centre back of your slip—and fasten two lengths of ribbon to the other corners and two into the front of the skirt. You will need no buttons or press studs.

A useful skirt can be made from a dress, the bodice of which is past repair. Cut it away at the waist—make a side placket, and mount it on a petersham band. The best parts of the bodice can be cut into a belt to finish the waistline or to make patch pockets on the hips. Pocket patches would hide any defects in the front.

An old skirt will make one pair of knickers and a little play suit for a seven-year-old.

Pyjama legs will make children's vests. Washing-silk dresses make up into gay pyjamas for children.

Quite small scraps of material left over from worn slips and knickers can be used for making brassieres. Use an old, well-fitting brassiere for a pattern.

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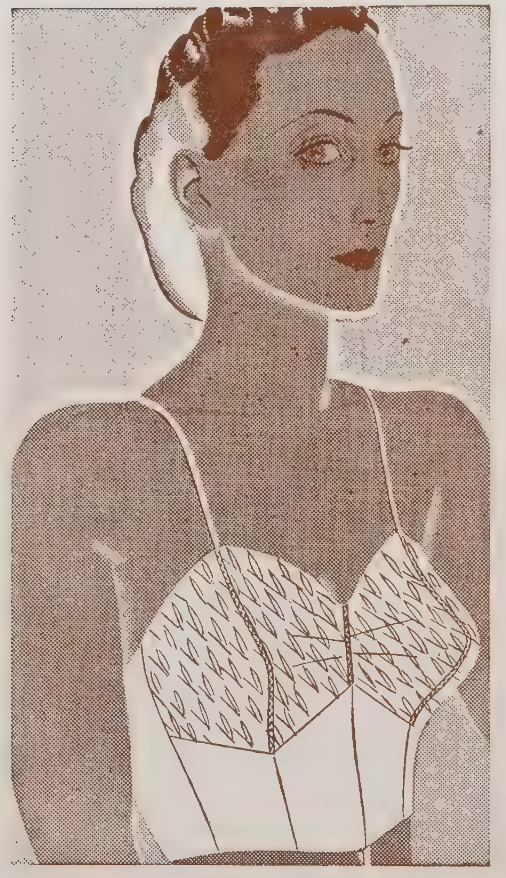
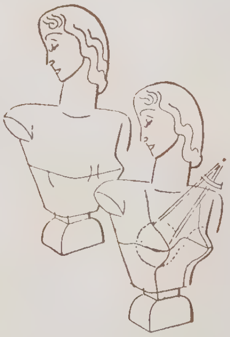
LIFE'S HARVEST

We must not hope to be mowers
And gather the ripe gold ears,
Unless we have first been sowers
And watered the furrows with tears.
It is not just as we take it,
This mystical world of ours;
Life's field will yield as we make it
A harvest of thorns or of flowers.
—Goethe.

"Faithfully yours . ."





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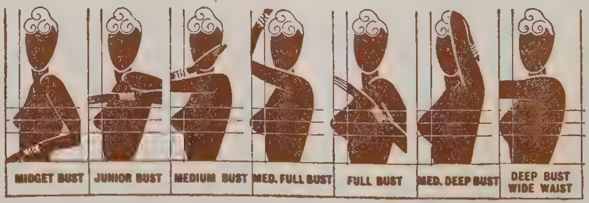

A New Leaf For Autumn

SO often we hear of folk saying they will turn over a new leaf when the New Year comes, but what about starting a new leaf now it is autumn? All around us the leaves are falling from the trees, and before very long the little new buds will be unfolding, and lo, a new leaf will be born on that tree. Let it be that way with you. Discard all those old leaves that have become tattered with so much use, and start afresh.

Autumn's loveliest tonings form the checks of this smart tailleur. Its crisp lines and classic simplicity not only commend it for present wear, but by varying the accompanying accessories it is also the ideal all-the-year-round suit.

WHERE to begin? Well, this is going to be a serious business, so tackle it seriously please. Start with your own room. Look in your wardrobe, and I'll be surprised if you don't find there an accumulation of old shoes, straw hats, frocks, all manner of things. Have a real clean out, and be quite ruthless—discard those things which have outgrown their usefulness so far as you yourself are concerned. But remember that there are many organisations these days who would be glad to receive some of your last year's frocks, so those that still have wear in them parcel them up and send them off to some place where they will be welcomed.

Now for your dressing table drawers. What an accumulation greets us here. Well, be ruthless once more, and discard those things which are no longer of any use. Slips, nightdresses, anything that requires mending, have a mending bee and mend them. Or perhaps you have a slip that always shows beneath your frocks? Well, shorten it while you are on the job. Go through your stockings carefully, and you will be surprised at how many pairs you can mend up or perhaps pair off with the odd one from another pair.

Now for handbags—are yours full of old letters, half-finished lipsticks, and the other hundred-and-one oddments that find their way into a woman's handbag? Out they must all go. Brush up the inside of your handbag with a stiff brush, shine up the outside with a soft polishing cream, and don't put back into them anything more than what is absolutely essential.

Letters—how many do you owe? Start with answering one a day, and be sure that you do it regularly. It is no use sighing every time you think of your letters waiting to be answered, for you know that the pile only grows bigger and bigger by so doing. And addresses—buy yourself an alphabetical address book if you don't possess one already, and write them all into it neatly. You will be surprised at how invaluable such a book can become.

And your own appearance—are you going to turn over a new leaf there too? We all experience spasms of slackness when we don't worry about how tidy our hair is, or perhaps are even careless enough to have chipped polish on our nails. No more of that—smarten yourself up, and it will take you a long way towards success.

And in smartening yourself up, don't forget the value of smart clothes. We are all finding dressing a problem in these days of strict rationing, but go over your wardrobe carefully, and you will be surprised at how you can smarten up last year's outfit with the aid of perhaps dyeing or dry-cleaning, and a new hat or scarf.

Give your mind a new leaf while you are about it. Take a new magazine just for a change—read different books, cultivate a new type of film, a new programme on the radio. You may find new favourites in these unexplored realms; on the other hand you may go back to your old favourites with a happier mind. But it will have been a break for you regardless of the result.

Why not try a change in cooking too? Discard all the old recipes for one week, and treat the family to brand-new menus for a change. Like the old books and magazines, you may be glad at the end of the week to go back to your old tried and favourite recipes, but it will be fun experimenting, and you never know when you are going to strike something really worthwhile.

Well, autumn is here, the trees are shedding their old leaves, so don't forget that the time to put your new ideas into practice is now, today—turn over a new leaf, and go ahead to better things.

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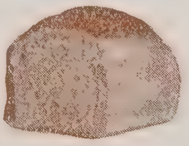
THERE is no doubt that the work we enjoy doing we invariably do well. Bread-making, gardening, teaching; sewing, writing, spinning; baking, entertaining, bringing up a family—every "Good Neighbour" has her own specialty in which she excels.

Congratulations to "Vee," winner of the first prize; "Vista" and "Homespun," second equal; and "Bry," "Barty," "Anne Margaret," and "Sunny," all highly commended.

First Prize

COMING to New Zealand from a large English city it was a great change to find myself on a bush section in the heart of the King Country miles from any shops. Fortunately, my husband's brother had learnt how to bake bread during the Boer War, and he taught me the art, since, if we were to have bread, I would have to make it and bake it in a camp oven—we had to do all our cooking that way.

My husband often used to invite the survey parties in for a cup of tea, and we would discuss literature, and they would exchange books with us. But one of the boys enlightened me as to the chief among many reasons why they liked coming to see us—"It's your bread! Our cook makes sour, heavy stuff."



The years passed and we went to live in K——, where my husband took up another bush farm. Again I had to cook with a camp oven, and when someone asked me if I would put something in the agricultural show in the "home-made section," I decided I would enter a loaf of home-made bread. A few days later my ardour was considerably reduced by a remark from a visiting neighbour: "You won't have a chance. My brother and I were bakers before we took up farming, and we intend to compete," and he glanced disdainfully at my camp oven. I felt rather crestfallen, but my husband, who has great faith in my capabilities, cheered me up and reminded me of the old saying, "Nothing venture, nothing win."

Early on show morning my three children were up bright and early to enter my exhibit, walking five and a half miles to the show grounds. When I arrived later with my husband and baby I avoided the "home-made section" and wandered round the grounds, where my husband found me. He had a beaming smile: "You have won first prize!" (The judges had not even mentioned our neighbour and his brother, who had been bakers). There were a number of other competitors, and how kind some of them were who came to congratulate me.

—"Vee."

Second Prize (Equal)

WHAT do I pride myself on doing best? Helping some little cripples to take their place in life

Before my marriage I was a teacher in England, and had various classes of retarded boys. These were drawn from the juniors between 7 and 11 years of age. They were a mixed group indeed. Some were there through illness, others through laziness. Some through lack of self confidence had fallen behind with their work. There were also the subnormal, and to me, most interesting of all, the cripples.

Kennie, aged 8 years, had been born with both legs the wrong way round. He had spent most of his short life in hospital, and now came to me a shy, sensitive little plant, still limping and in irons. The slightest word of discouragement reduced him to tears. He knew a few letters, that was all. Each playtime he brought his little chair and primer beside my desk and together we opened a new world for him. Books! If a child cannot take his place with others in outside activities, he must have the world of books open to him. I saw it as a sacred duty and never begrudged the extra time given to him. At the end of a year he moved to another district, but by then was reading quite well, but above all had gained confidence in himself.

Gordon was a very different proposition—big-framed, gay and careless, with bright golden curls and fresh complexion, but with the dreadful handicap of a diseased hip. He was 9 years old and the youngest of a big family who idolised him. At first he came to school when he wanted to, which was seldom. His reading was that of a child of five, and his arithmetic was little better, yet he was a bright, intelligent boy. Gordon had a special desk to sit in, and his crutches stood beside him. I never hope to have better virgin soil to work on. I explained the role books must play in his life; his interest quickened, and soon he was absent only on wet days, when the pavements were treacherous for him. I gave all my spare time to him, since the rest of the class must have their share of school time. His family became interested and helped, too. At the end of that year Gordon was able to take his place with boys of his own age, holding his own with them.

These are only two of the many who made my work worthwhile. Yes, I do take pride in doing this best.

—"Homepsun."

It Seemed to Me

It seemed to me as if
The leaves of that autumn morning
Had flung themselves at the east,
In the splendour of its dawning.
As if some breath of wind
Had carried them on its way,
The glory of that sunrise died
As the sun brought light to the day—
Like some heroic horseman
Undaunted to meet the fray,
Beauty sped on the back of time,
No longer could it stay.

—Betty Orr.

Second Prize (Equal)

I HAVE always been a garden lover, and when you love a thing you know by instinct how to do it well. Trees and plants are very like children: they have their likes and dislikes, but always respond to the right treatment. I now find myself giving the same care and attention to my plants as I did to my growing children a few years ago. A garden provides interest and pleasure when one has more leisure from the sterner duties of life. The little seedling planted so long ago is now a tree, and you can enjoy the shelter it affords from sun and rain; you can lean against it for support; you can gain strength and comfort from a tree.

I have devoted one side of my shrubbery to native trees and plants. The tall bush trees form the background, and in front I have planted veronicas, manuka, coloured flax, senecios, and dianella, with its lovely blue berries. These shrubs provide flowers, and also sheltered the seedling trees in their more tender years—they now tower high above everything, and I have planted ferns and mosses and other shade-loving plants underneath them. A little path winds through: it is a pleasant retreat, and from it one gets a lovely view of the rest of the garden, which is devoted to flowering cherries, currants, peaches, crab apples, and many other decorative varieties. In front of the shrubberies are long beds of perennials and all kinds of bulbs and lilies. These do not entail the work that annuals do. One thing follows another and there is always something in bloom. By the house I grow geraniums and numerous kinds of fuchsia, that old-fashioned plant so often neglected in modern gardens.

Competitions

APRIL

April 15 is the last day for receiving entries on the subject, "What I Wish Most for My Child."

MAY

Many of you must have caught with your cameras much that would be of interest to other "Good Neighbours"—snaps of your home and home life, your garden, farm and outdoor activities, child and animal studies, and scenery. Many of these will have a wider appeal than you anticipated when you took them. If you send your snaps to me, together with a description not exceeding 100 words of the subject matter, others may share in the pleasure you get from them. The negative should accompany each print if possible, also a stamped addressed envelope for its return. Competitors may send in any number of entries. The first prize is 10/-, there will be a second prize of 5/-, and 2/6 will be paid for each photo retained for future use, such photos to become the property of the "Journal."

"PHOTOGRAPHIC CONTEST"
Closing date, May 15.
"MARY,"
"Journal of Agriculture,"
Box 3004, Wellington.

My garden has been evolved from a paddock in which the house stood forlornly alone when we first came here. With the precious moments my husband and I could spare from breaking in a new farm, we made the garden, bit by bit. He did the hard spade work, laid water pipes, and built me a summer house and pergolas. Our latest addition is a lily pond. I love dabbing on bits of concrete and shaping it. I mended some old, broken flower pots with the cement, also my watering can, which had sprung a leak, and patched up some discarded drain tiles. The latter made good containers for hanging plants.

I love my garden: it has been a refuge in days of stress and sorrow, a happy link in friendship's chain, and given joy to many who are not so fortunate as to possess a garden of their own. Kipling knew his garden when he wrote:

> *"And when your work is finished*
> *you can wash your hands and pray*
> *For the glory of the garden that it*
> *may not pass away."*

—**"Vista."**

Highly Commended

BEING an indifferent cook and a poor needlewoman, and always having had to maintain a discreet silence when tomato-growing, painting, or arrangement of flowers are mentioned, I should have found difficulty in truthfully deciding on an accomplishment of which I am proud, had it not been for a sincere remark of my brother's. I overheard him say that he looked forward to my "super" letters. Immediately, any suggestion of an inferiority complex vanished. I could write a good letter! With this knowledge came the desire to improve my letterwriting.

Accordingly, I began to try to make my letters more spontaneous, considering always the individuality of the recipient. Now I find that I can easily describe humorously trivial everyday occurrences. Although I am no artist, I manage to produce quaint stick-men drawings, which illustrate some description, and because of many imperfections, are amusing. I have found that absurd limericks about my doings, really funny jokes, and suitable quotations are much enjoyed, and I know that a welcome addition to any letter is a newspaper cutting describing a local event or a latest "find" in poetry or prose.

Because I delight in the one thing I can do well, it has become for me one of the most perfect of everyday joys.

Letters of condolence, of thanks, of congratulation, an unexpected letter to someone in hospital—I know these have been appreciated and often caused a small happiness.—**"Bry."**

THE children's sewing, the mending and darning are what I pride myself on doing best. I have taught myself how to make their clothes, besides my own, from new materials, as well as using partly worn-out garments. I take pride in keeping everything neatly darned and mended. As I iron I place on one pile the clothes needing repairs, and I attend to these when the weather is too wet to work in the garden.—**"Violet Ann."**

TROUSER-MAKING is my strong point, and the addition of pockets (an accomplishment learned this last year) has given great pleasure to my "young men."—**"Bluebell."**

Sowing and Reaping

Sow with a generous hand;
Pause not for toil or pain;
Weary not through the heat of summer;
Weary not through the cold spring rain;
But wait till the autumn comes
For the sheaves of golden grain.
Sow, and look onward, upward
Where the starry light appears—
Where, in spite of the coward's doubting,
Or your own heart's trembling fears,
You shall reap in joy the harvest
You have sown today in tears.

A PRICELESS GIFT
— to —
PRISONERS of WAR

DID YOU KNOW . . . that we are able to arrange for the world-renowned DOBIE'S FOUR-SQUARE Tobaccos and Cigarettes to be sent to any Prisoner of War (except those in Japanese hands) and also to any member of the armed forces serving overseas.

All you have to do is to send for a price list, thereafter place your order and give us full details of the Name, Rank, Number and Address. We do the rest.

Simple isn't it? But just think what a wonderful gift it will be to your boy overseas, what a happy surprise! There's no restriction on the number of parcels you may send — one a week if you wish.

So write in for details and prices of this unique service!

GIFT PARCELS

We specialise, too, in forwarding Gift Parcels, containing the badly needed sugars and fats, to the bombed-out populace of Britain. They need these parcels—they cannot ask for them—it's just up to you to help your relatives overseas.

Write and inquire for details of the 20 different parcels available. They have been highly commended.

JOHNSTONE & BRINSDEN Ltd.
(Successors to A. C. Norden)
Nathan's Bond Building,
45-47 Customs Street East,
AUCKLAND, C.1.

SPINNING is what I pride myself on doing best. As I comb the wool and put my foot on the treadle I wonder how long it will take me to make a skein. As I near the end of the spool I work the treadle faster, so as to finish more quickly. Then, as the plying is started, I watch the threads closely so that they will not be twisted too much. When the wool is washed and dried in the wind, and I bring in my snowy white skein, I think that spinning is certainly the thing I do best.—**"Bubbles."**

THERE is nothing I do so well as teaching, even if inspectors' reports and the passes gained by my pupils did not verify such a statement, which they do. "Happy is he who likes his work" is very true. There are plenty of things I should like to do well—play the violin, knit, understand the "innards" of a motor-car, be a "super" housekeeper. All these things I do, but they are an effort, whereas teaching just comes naturally to me, and when confronted with an eager young class, a blackboard, and a stick of chalk, I feel on my native heath. In no time I am deep in French irregular verbs, or quadratic equations, and everyone is happy.
—**"Molly Malone."**

I HAVE done my best to ensure for my children a happy, healthy childhood, always endeavouring to divide my attention in the best proportions between their physical and mental needs. I have tried not to allow the mending to push aside the bedtime story, or preoccupation in the preparation of meals to prevent answering the questions of their wondering minds. I have tried not only to give them a good general environment, but, by careful watching of their individual traits, helped them as far as lay in my power to develop any special gifts.—**"A Mother."**

HB
NEW ZEALAND
A good name always bears repeating
If it's H.B. it's GOOD.

Hallensteins
FOR MENS & BOYS WEAR

I PRIDE myself on rearing calves. Their treatment and diet—why, it is worse than looking after a room full of babies! A I watch the future Jersey herd go by I feel very proud of them.—**"M."**

THE thing I do best and really take a pride in is—cleaning and tidying cupboards! Perhaps it is a remnant of my commercial training as a stock-keeper. The old habit dies hard! Mind you, it is a serious business. Woe to anyone who disturbs me when I am having one of my re-organising days in the kitchen! Everything must come out. The jars and tins must all be emptied and washed and re-labelled, and new jars and tins found for those which are the wrong size or shape. All the bits of string, rubber bands, stray corks, and odd lids must be sorted out and put in boxes and marked. And then, to put them back; the canisters ranged in their sizes, smallest on the left, the condiments and flavourings in alphabetical order. Every pot and lid in its place, the soap, the scrubbing brushes, the polishing wax and oil, the metal polish and the window cleaner, the dusters and the old newspapers all in the place where they should be. Of course, I know they won't stay that way; hurry and carelessness will soon have them all in a muddle again, but if that didn't happen how would I find an excuse to clean the cupboards, and I do take such pride in it!—**"Polar."**

I THINK I take most pride in my gardening efforts. Oh, the satisfied feeling when, after a good hour's work, I stand back and survey a piece of waste ground well dug and planted, and I visualise the crops of vegetables. There is also the satisfaction of making something grow where nothing grew before.

And the pride I feel, too, when I pick those crops straight for the table, knowing that I am giving them to the family fresh and full of nutriment.

Then the building up of the compost heap, and digging it in to help repay the good earth for her gifts.

Yes, in being part of that cycle, I take more pride than in anything else, for I feel that I am making myself of some use on this earth.
—**"Buttercup."**

I PRIDE myself on my organising ability, and take a delight in arranging parties or other forms of entertainment. As they almost always turn out successfully, I can take a modest pride in my achievements. Through the years I have collected various games, competitions, and novelty entertainments, and, even when "stumped" for something a bit out of the ordinary, can usually produce the necessary from a fertile imagination. The organising personality is often regarded as a bossy person, but where would most functions be without a person who is ready—yes, and willing—to take upon her shoulders the responsibility of seeing that things go smoothly. Any woman who has taken part in organised clubs will know that the majority of the members always look to a guiding personality. They are willing to work, but not to take the responsibility of the thinking and directing. I just happen to like it, that's all.
—**"Cayenne."**

Treasure

These are my loves:
Sparkling dew on grasses, and after
Noon-day brightness; singing birds;
And the sound of children's laughter;
Pale days, misty and grey with peace;
Running water; and waves that break
In mighty majesty on rocks; deep
Cool reflections on a purpled lake;
Sweet-smelling fragrance of the
lavender . . .
White magic of a moonlight night . . .
These, these are mine to always treasure,
They were made for my delight.

—Mary Kitching.

SYMBOL

Bitter is the autumn wind,
Chill the crystal grief of rain.
No tree blooms, or flow'r, save these
Chrysanthemums: they brave dark bane
Of cold and gloom with resolute
Warm beauty—some gold-rayed as
light;
Some like coral sunset clouds;
The rest snow-petalled, glist'ning
white—
Symbolic of the heart's true love
That droops not 'neath harsh sorrow's
tears,
Nor withers at the storms of chance,
But brings fair bloom to barren years.
—Enid B. V. Saunders.

Adjusting Menus for Less Meat

FOR many families meat rationing calls for few, if any, diet changes, but those who have used meats more generously in the past find menus need adjusting carefully now. Meat supplies six main food values in goodly amounts: Protein of good quality; iron; phosphorus; and three of the B vitamins, niacin, thiamine, and riboflavin.

HERE are some American ideas of how to make meat go furthest and lend the greatest variety to meals. They are reprinted from a bulletin issued by the Bureau of Human Nutrition and Home Economics of the U.S. Department of Agriculture.

Make sure the meals you serve using less meat still supply ample amounts of the same food values. For good protein, the B vitamins, and phosphorus call on poultry, cheese, milk, eggs, fish, dried beans and peas, lentils, and peanuts. Excepting milk, fish, and cheese, these are also good sources of iron. For the B vitamins and iron stress also whole-grain and enriched cereals and bread. Green leafy vegetables are rich sources of iron. Rabbit and game are still other alternatives for meat.

Make the Best of It

Get the most from every bit of meat.

Be open-minded about using different cuts and kinds of meat.

Know your cuts—and the best uses for each cut.

Know what meat grades stand for.

Buy only as much meat as you have plans to use—and ways to store.

Put uncooked meat in a well-ventilated safe or other very cold storage space if you keep it longer than a few hours. Cooked meat also needs careful storage. Minced meat, cooked or uncooked, needs colder storage and cannot be kept so long.

Cook meat the modern way—at moderate heat until done and no longer. This keeps cooking losses low, and the meat is more juicy and tastes better.

Cook according to cut and fatness. Roast or broil a tender cut—in an uncovered pan with no water added. Give tough meat long, slow cooking in a covered pan with water or steam. Or mince tough cuts and cook as tender meat.

Vary the seasonings, especially when you use the same kind of meat often. Try a little onion or tomato . . . a dash of herbs or spices . . . to give a different taste.

Serve in many ways. Give stew new appetite appeal, for instance, by serving it in meat pies, as a filling, or scalloped with macaroni or spaghetti.

Save all left-over meat and gravy. Learn thrifty and tasty ways to use them.

Spread Meat Flavour

Spread out the good meat flavour in more meals by mixing meat with bulky, mild-flavoured foods. Try cereals, bread, vegetables, and sauces as "meat extenders."

Loaves and patties. Bind well-seasoned raw meat with boiled rice . . . bread crumbs . . . white sauce . . . mashed potatoes . . . oatmeal, cracked or whole wheat. Mould into patty cakes for quick top-of-stove cooking or loaves for oven baking.

Pot roasts. Add whole or halved vegetables to pot roasts during the last hour the meat cooks.

Stews. Add sliced or diced vegetables when meat pieces have cooked almost if not entirely tender in water to cover. Top with dumplings to spread flavour more.

Meat pies—family size or individual. Top a stew with pastry or mashed potatoes.

Soups. Add pearl barley, macaroni, cracked or whole-grain wheat, or spaghetti to soups made from meat trimmings and bones. For more variety add vegetables.

Stuffings. Make well-seasoned stuffing to "space out" a boned roast, a pair of spare rib sections, or small strips of meat.

Meat and beans. Combine beans simmered nearly tender with minced meat well-seasoned. Cook slowly until mixture thickens.

Meat sauce. Brown minced raw meat, season with onions, peppers, or tomatoes. Serve over cooked macaroni, spaghetti, rice, or potatoes.

Croquettes. Season minced cooked meat. Bind with boiled rice, mashed potatoes, or white sauce. Shape. Fry or bake.

Baked stuffed vegetables. Use same type mixture as for croquettes to stuff tomatoes, potatoes, or onions.

Turnovers. Fold a well-seasoned filling of chopped, cooked meat in rounds of pastry. Bake. Serve hot . . . or in place of sandwiches.

Timbales. Bake a mixture of minced cooked meat, white sauce, beaten eggs, and seasonings in custard cups set in a pan of hot water in a moderate oven.

Souffles. Mix minced cooked meat, bread crumbs, white sauce, seasoning, well-beaten egg yolks, folded-in beaten egg whites. Bake in cups or dish set in a pan of water in a moderate oven.

Creamed meat. Add chopped or minced cooked meat to milk sauce. Pour over bread, toast, waffles, potatoes, boiled rice, or macaroni.

Hash. Mix chopped or mashed cooked potatoes with chopped or minced meat. Season to taste and fry in cakes or in one big layer.

For **southern hash** cut cooked meat in small pieces, brown in fat. Then add diced potatoes, sliced onion and other seasonings, gravy or meat broth, and cook on top of the stove or in the oven.

Scalloped meat. Fill a baking dish with layers of chopped minced meat or meat stew and cooked macaroni or cooked vegetables. Pour sauce over all, top with bread crumbs, and bake.

Baked with vegetables or fruit. Put layers of sliced cabbage and apples in a baking dish, lay fried sausage cakes on top, cover and bake until cabbage and apples are tender.

Sandwiches. Give a "different" taste to meat by adding catsup, chili sauce, chopped pickle, thin slices of mild onion.

"MALTO"
FOR HOUSEHOLD
BAKING

For all household baking including scones, gems, biscuits and sponges. Healtn-giving and very tasty.

"MALTO" is made by
A. MURDOCH & Co. (Dn.) Ltd.
The grocer has it.

ISSUED BY THE DEPT. OF HEALTH

"WHAT'S ALL THIS FUSS ABOUT VITAMINS?

Why should I bother with vitamins and minerals and things — I want a square meal"

There's no need to 'bother' with the essential food elements. Eat a diet as balanced as you can get and the vitamins and minerals and all the rest *will be there.*

A square meal is not one that gives you that 'full' feeling, but one that gives your body what it needs for full health.

Here's your ideal food programme:

MILK: Two glasses daily for each adult; 3-4 for each child. Take simply as milk, or in the form of hot drinks, soups, puddings and sauces. *Dried Skim Milk* may be used for cooking purposes and to reduce expense.

EGGS: Three or four a week—one a day, if possible, for the children. When not available use more *dried peas, beans and lentils.*

MEATS: Rationed or unrationed, or FISH OR CHEESE DISHES—one helping at least each day.

POTATO: One or more helpings every day, with TWO OTHER VEGETABLES, one of which should be green or yellow.

FRUITS: Two fruits, one of which should be a citrus fruit or a tomato, or black currants or gooseberries (raw or bottled). The other fruit may be raw or cooked, fresh or dried.

FATS: The butter ration is sufficient, together with meat fat and the fat used in cooking.

BREADS, CEREALS, FLOURS: At least *half* should be wholegrain.

Eat anything else you like but plan your diet on the above basis. And don't forget to use IODISED SALT. And remember the daily dose of COD LIVER OIL in winter.

The nearer you get to this programme, the better will be your health.

15a

FOR A HEALTHIER NATION

Make hot open-face sandwiches by laying slices of cold or hot meat on toast, bread, or biscuits. Top with gravy or savoury sauce.

For a **French-toasted sandwich** spread cooked minced meat between bread slices, dip in egg-and-milk mixture, brown on both sides in a little fat in a frying pan.

Salad. Combine cooked macaroni, potato, or other vegetables with cooked chopped meat and salad dressing, and serve with lettuce, cress, or cabbage.

Variety Meats

Liver, kidneys, brains, and other variety meats usually are richer in iron than the muscle meats—some are extra good sources of one vitamin or another. In protein they rate about the same as muscle meats.

Liver. Fry at moderate heat long enough to change the colour. Don't over-cook.

Scallop browned slices of liver with alternate layers of potato slices and a little onion. Cover with milk, bake till potatoes are tender. Or use cooked rice, or macaroni instead of potatoes.

Make liver **loaf** from liver browned slightly, then minced. Mix and bake as any meat loaf.

For a **sandwich spread** make a paste of liver broiled, fried, or simmered, then mashed or minced and seasoned.

Kidney. Grill or fry tender kidneys.

Make stew of less tender kidneys.

Heart. Simmer long and slowly. Serve with onion gravy made from the stew broth. Season well.

Fill a heart with tasty **stuffing**, cook in a covered baking dish with water added.

Use chopped cooked heart as the basis for a meat **loaf.**

Tongue. Simmer, serve sliced, hot or cold, or "extended" with a white sauce.

Simmer, then **bake** in a covered dish with sliced vegetables.

Sweetbreads. Simmer till tender. Cool in liquid. Then dip the sweetbreads in an egg-and-milk mixture, and brown in fat.

Grill cooked sweetbreads. Pour melted fat over them and brown slowly.

Cream cooked sweetbreads and serve over toast or in patty shells.

Brains. Precook in simmering water. Dip in an egg-and-milk mixture, then in bread crumbs, and fry.

Cream cooked brains and serve on toast.

Chop cooked brains and bind for **croquettes.**

Scramble cooked brains with eggs.

Make a salad from chopped cooked brains, chopped celery, and salad dressing.

Tripe. Simmer tender in water. Cut in slices, dip in batter, and fry.

Dip tripe, cooked tender, in melted fat, **brown** both sides in the **broiler.**

Cut cooked tripe in finger lengths, serve in a seasoned medium white sauce for **creamed** tripe.

Serve Poultry

Chicken, turkey, duck, goose all make excellent main dishes.

Young, tender poultry. Broil plump young birds at moderate heat. Turn from time to time. Baste frequently.

Fry plump young birds in shallow or deep fat.

Stuff and roast young well-fattened poultry. Keep oven temperature moderate.

Older birds or **lean young poultry.** Stuff and braise in a covered roaster.

Brown cut-up fowl in a frying pan, then finish cooking in a **casserole** with added water and chopped raw vegetables.

Old, tough birds. Stew or **steam** to make tender. Cook in broth.

Cook dumplings in a gravy made by thickening broth from stewed chicken.

Cream and season stewed poultry cut from bones. Season, and serve with rice, in patty shells, or crisp toast or waffles.

Use chopped cooked chicken as the basis for **meat loaves, croquettes, souffles, timbales, chop suey.**

Cook **giblets** tender in a little water or broth. Thicken slightly. Serve piping hot with potatoes, toast, or rice.

For a **giblet sandwich** chop tender cooked giblets up fine. Combine with salad dressing or a little fat, and seasoning. Spread on bread.

Cook cut-up **livers** of young chicken in a frying pan in a little fat. Cook just long enough to change colour of the liver. Serve with the drippings.

Fish and Shellfish

Don't be shy about trying new kinds of fish.

Fresh fish. Bake, boil, or fry fish at moderate heat.

Cooked fish stripped from the bones is good in cakes, scalloped dishes, loaves, croquettes, salads. Space it out with rice, mashed potatoes, spaghetti, or white sauce.

Salt or smoked fish, when and if available, may be used in most of the same ways as fresh fish—except that it is necessary to soak or parboil the fish first to remove part of the strong salt or smoke taste.

Oysters. Serve in stews. Dip oysters in egg and crumbs and fry. . . . Scallop oysters with crumbs, with rice, or other bulky food. . . . Heat oysters, then season, cream, and serve on toast.

Cheese . . . eggs . . . dried beans . . . peanuts . . . like meat, all make a good basis for stick-to-the-ribs dishes around which to build a meal. They all contain protein, plus one or more of the other food values found in meat—and usually extra food values of their own.

Cheese Main Dishes

Make it eggs and cheese in fondues and souffles.

Melt cheese in **white sauce . . . pour** over cooked macaroni or **spaghetti,** for a hot casserole dish. **Use this** same sauce for vegetable dishes.

For a **rabbit,** combine grated cheese, white sauce, egg. **Serve over toast** or bread.

For a main-dish **sandwich, toast** cheese on bread in the oven, **under** the griller, or in a frying pan. **Dip** in egg-and-milk mixture, then **fry for** a French-toasted sandwich.

Serve **cottage cheese** "as is," **seasoned** to taste—and in salad and **sandwiches.**

Eat Eggs

Serve **eggs as eggs**—soft-boiled, hard-boiled, devilled, poached, fried, baked, scrambled. For best results keep heat moderate when **you cook** eggs.

For a **hearty baked dish,** mix hard-boiled eggs, cheese sauce, macaroni, or spaghetti, and top with bread crumbs.

For **egg sandwiches,** fry an egg firm, or combine sliced hard-boiled eggs with salad dressing. . . . Mix scrambled eggs, hot or cold, with catsup or tomatoes.

Dried Beans and Peas

For **plain cooked** beans, soak, simmer slowly in a covered pan. Flavour with something salt, sour, fresh, crisp, bright, or spicy.

For a **baked loaf** or **croquettes** combine mashed or chopped cooked beans, milk, beaten eggs, bread crumbs, and seasonings.

For better bean **soup,** add finely chopped peanuts . . . tomatoes . . . carrots . . . or bits of cooked ham or sausage.

Hearty bean **sandwich fillings.** Combine baked beans with onion, pickle, relish, or catsup. . . . Moisten with salad dressing. . . . Combine chopped peanuts and baked beans.

Peanuts, Peanut Butter

For a **loaf** or **croquettes,** mix chopped roasted peanuts with carrot or other chopped vegetables. Bind together and shape.

Try peanuts with tomatoes, sliced onion, and other vegetables in **scalloped** dishes.

Vary peanut-butter **sandwiches** with chopped crisp vegetables such as carrot or onion . . . chopped dried fruit . . . jelly, jam, honey . . . salad dressing . . . chopped pickle . . . hard-boiled eggs.

Blend peanut butter with sieved tomatoes **for a soup.**

Thicken hot milk with peanut butter for a **sauce** for scalloped or creamed rice, macaroni, potatoes, and other vegetables.

Add peanut butter to **omelet.**

Protection!

Insist on Sanray—the ideal disinfectant for all farm and household purposes.

Lathers freely with soapy water. Remember — Sanray for health protection.

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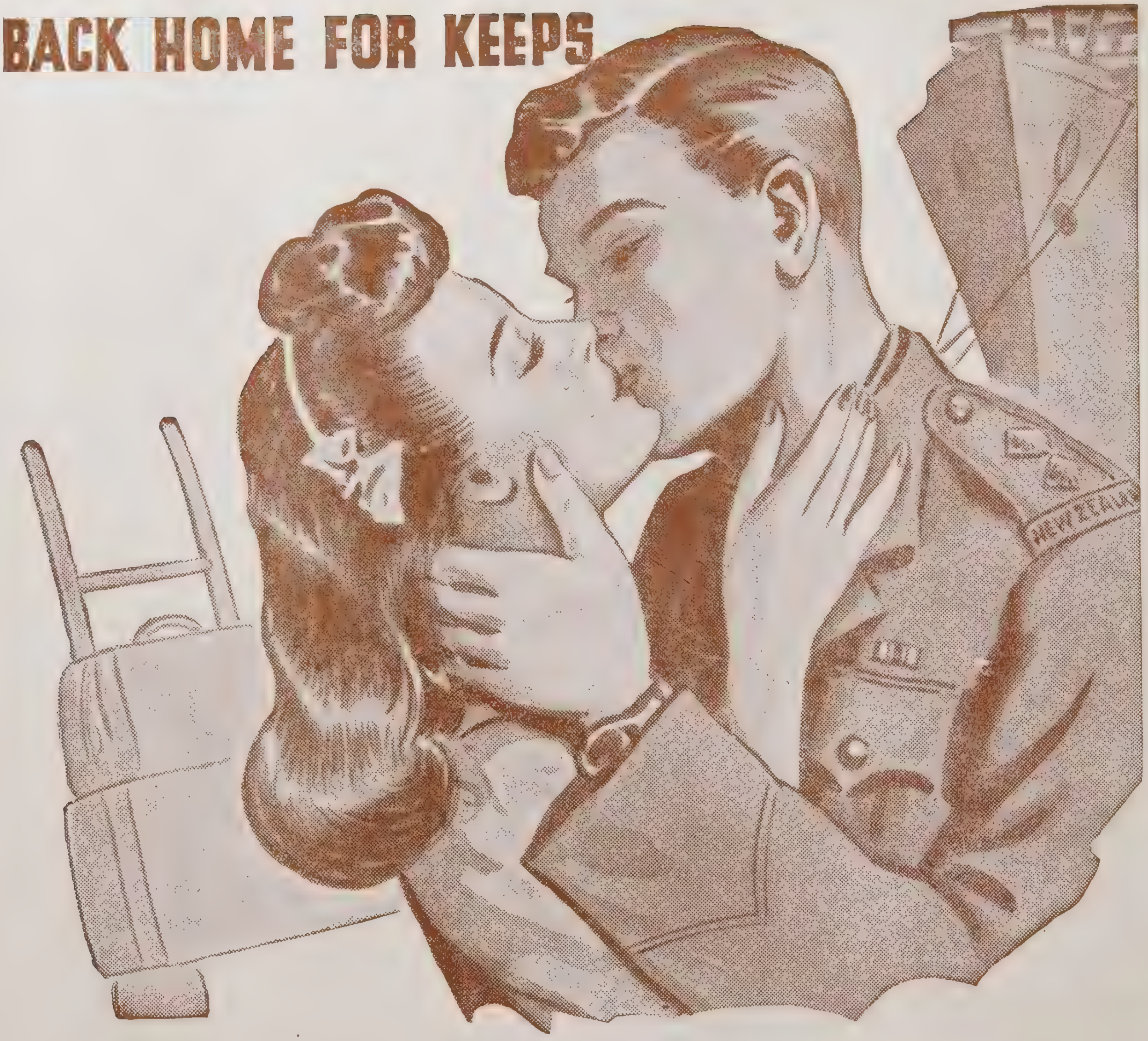
BACK HOME FOR KEEPS



This is no dream . . . this time it's real! Your waiting days are over, your dreams a reality. And that day will come when he'll be home again . . . home for keeps.
The day will come when Onehunga products are back again, too, when the great resources of the Onehunga Mills will swing from War to Peace production, and you'll again be able to buy all the Onehunga goods you want. Until that day we'll have to say: "Keep your chins up; it won't be long now!"

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Mary's at - Home -

"There are nettles everywhere,
But smooth green grasses are more common still;
The blue of heaven is larger than the cloud."
(*Elizabeth Barrett Browning*).
—"Anita."

A GOOD way of overcoming the difficulty of the present elastic shortage is to procure a piece of an old inner tube of a car tyre. Cut it into rings ¼in. to ½in. in width, and tack into position on the garment requiring the elastic, turning the hem down over the rubber and then machining, easing the fulness round as you go. Take care not to stitch into the rubber. This results in a strong, elastic top which will stand up to a great deal of wear. Care must be taken not to put a hot iron near the rubber when laundering.

—"Roslyn."

SOME years ago we were transferred to a small country village. Our effects arrived by lorry some six hours before we got there. Unfortunately they were left at the gate, about a hundred yards from the house, which was on a steep rise. The rain came on and we worried about our household goods. When we arrived just before dusk, imagine our joy to find a kind neighbour had sledged them up to the verandah and stacked them there and in one of the empty rooms. What a help it was to us, and how we appreciated the kindly action—we no longer felt strangers in a strange land.

—"Darky Top."

AUTUMN

Grave Autumn sits in absent-minded mood,
Weaving her bobbin slowly in and out
Of Summer's tapestry. Her fingers brood
Upon the colours tumbled all about.
It seems as if by chance her idle hands
Seek always gold and always scarlet thread;
Her tissue is a glory when it stands
At last complete. . . And then she shakes her head.
Quickly she works in russet tones and grey,
And pulls out gold and scarlet bit by bit,
Embarrassed that her fingers should betray
Old woman's dreaming, and she sigh for it.

IN a book I was reading the other day I came across this paragraph: "In the easy come, easy go days through which we have lived, most of us have no conception of old-fashioned thrift. A verse written about 1876, and quoted freely by grandparents and great-grandparents, takes on a new meaning for us today when we are faced with scarcity rather than plenty.

"Waste not, want not, is a maxim I would teach:
Let your watchword be dispatch, and practise what you preach.
Do not let your chances like sunbeams pass you by,
For you never miss the water till the well runs dry."

—"Roundabout."

How bravely Autumn paints upon the sky
The georgeous ferns of Summer which is fled!
Hues of all flowers that in their ashes lie,
Trophied in that fair light whereon they fed,
Tulip and hyacinth and sweet rose red.
—Thomas Hood.

THERE are poems of many kinds, grave and gay, to fit one's mood. My favourite is:—

"The night has a thousand eyes
And the day but one;
Yet the light of a whole world dies
With the setting sun.

The mind has a thousand eyes
And the heart but one,
Yet the light of a whole life dies
When love is done."

—"Francisca."

IF I can learn to guard the citadel of my mind with all the strength of which I am capable, so that no evil thought can enter and thrive there, I shall have gone far towards conquering any tendency towards saying and doing unkind things. I would like to be able to discern unfailingly the "first things of life" and always to put them first; to learn "to be and do" according to the highest that is within me.

—"Jonathan."

I LIKE to watch the gulls on the seashore. Their immaculate white feathers contrasting with the soft dove-grey along their backs and their vermilion beaks and legs, make a perfect picture with the blue-green sea and yellow sand as background.

—"Joyce."

ABOUT reading: there is a book entitled "Infants Without Families," by Burlington and Anna Freud, which is most interesting, being an intimate study of three English residential nurseries, their inmates ranging in age from birth to 6 or 7 years. The book gives an unbiased account and discussion of this very important experiment. All parents could read it with both pleasure and profit, and all women who are making an effort to develop their children's individuality should do so.

—"Dorothy."

IF each day I myself am a little more tolerant and less impatient, if I develop my powers of usefulness and understanding; if I stop making excuses for my own failings and cease to push my responsibilities on to the shoulders of others, then I'll have done my bit. I will have really helped to create that worthier future we all, in one way or another, want to see come true.

—"Tiggetty Boo."

I HAVE read your "Good Neighbour" pages since they first began and look forward to them every month. I agree with your correspondent, "Pet." After reading your chats I always feel ready to start the household tasks with renewed vigour. I also have my favourite "pieces" from the various writers to look for in each issue. I do enjoy "Roundabout" and "Tiggetty Boo."

I LIKE this little verse entitled Holidays":

"The bow that's bent will quickly break;
But if unstrung will serve you at your need.
So let the mind some relaxation take
To come back to the task with fresher heed. . . ."

—"Roundabout."

AUTUMN LEAVES

Autumn leaves though we may be,
Thou, brave heart, and I,
Hanging loosely on the tree
'Neath an ashen sky;
Though at a mere breath we go
Whirling on the blast,
Brighter hour by hour we glow,
Redlier our life-currents flow,
Richer still our store; and so
It shall be to the last.

Abuse of Medicines

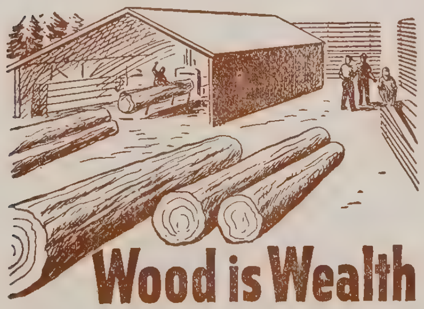
Contributed by
The Department of Health

MEDICINES and drugs fulfil an important and desirable function in our daily lives, provided always they are used with reserve. That's far from being the case in New Zealand. There's too great a tendency for people to rush to a medicine bottle or a packet of pills whenever they feel a little out of sorts—far too little inclination on the part of the majority of people to achieve health in the natural way. Good health does not come in a bottle. You may get something to alleviate some pain or other, or some tonic to pep your system up, but until you try healthy living you're not going to get that glow of well-being that makes life really worth while. And healthy living isn't such a difficult matter. It's within reach of every normal person, provided he's willing to practise certain simple and satisfying rules.

The purpose of this article is to sound a warning against the abuse of medicines and drugs. The Social Security Act has brought within reach of everyone facilities for medical care, that include free drugs and medicines—that's to say, so long as they're the ordinary medicines normally used in medical practice.

Millions for Medicines

Now look at what's happening—last year the people of New Zealand spent about £750,000 of social security funds on medicines, which is equal to roughly 10/- per head of the population. And that doesn't take into account the medicines obtained from doctors' prescriptions not chargeable to the fund, nor the huge quantity of proprietary medicines and preparations used outside the scope of the benefits. We have, in fact, become rather too medicine-minded, and have abused the benefits of social security.



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You will find that the good doctor uses drugs in reserve; the poor doctor liberally. Some of these medicines cure diseases, others don't. The only way to control disease in general is by living a normal healthy life—a formula which is within reach of most of us. Application of the habits of healthy living to your own daily life requires adequate knowledge of nutrition, of the balanced diet, a knowledge of personal hygiene, and daily activity. The mental side of our lives, too, requires right attitudes to allow the development of character and personality. Abstract matters, you may say, but they're a most important part of our personal equipment, and they depend on healthy living to develop properly.

Beware of Faulty Habits

This business of healthy living requires action on the part of the individual, who must have health knowledge. He hasn't got enough of it at the moment. He thinks of health too much in terms of doctors and medicines, and too little in terms of natural and easy ways of living. It's very easy to slip into the habit of faulty habits of living and eating. At the time it seems all right, but many people don't realise—or if they do, they simply won't admit the fact, even to themselves—that faulty habits can cause disease. They can bring on nervous breakdowns, organic diseases, or the degenerative diseases of middle age and later life—diseases that are taking a terrific toll of the older folk.

Immediately something goes wrong, this sort of person asks himself what medicine he needs, what doctor he should go to, instead of asking himself how far he himself is to blame for his condition.

The State is doing its share in looking after your bodily health. What about trying to do something about it yourself? After all, it's your body, your health, and when it comes to keeping them in good condition you're the only person in the world who can do it. It's up to you. Use medicines only when they are really necessary, and try stepping into a routine of healthy living.

Missing the Tram

IT was a cold, drizzling, foggy evening. The car came down the hill uncertainly, as if seeking a foothold on the slippery tram lines. Immediately it stopped the waiting crowd surged forward to get aboard somehow. The lady in front of me had a baby and a pram and innumerable parcels. I said, "I will fold your pram and put it on the luggage carrier." No sooner had I done so and stepped back a pace or two to collect my suitcase of books than the overladen tram moved off. Usually at such times I could grab at it and get one foot aboard, but in the darkness I did not dare risk it, though such gymnastics would not have been beyond me in those days (I was 20 years younger then and a junior teacher in a big school). Well, I'd missed the tram. It was pouring and I gave way to despondency as I sat down on the wet seat and awaited the next one.

A man came up and lifted his hat: "Oh, we seem to have both just missed the tram. Aren't you Miss Ego of Big School? Yes, yes! How would you like to go to Xville and be in charge of the District High School?"

Would I! Of course the secretary of the Education Board was just joking—he didn't really mean me. But evidently he did, for I was duly appointed to Xville. I got my feet on the "ladder of fame," and in five years I was one of the youngest highly-graded teachers in New Zealand. I met my husband in Xville; I married; and now, 20 years later, I am back in the classroom, still a highly-graded teacher—and all due to missing a tram!

—"Alter Ego."

Glad that I live am I;
That the sky is blue;
Glad for the country lanes,
And the fall of dew.

After the sun the rain,
After the rain the sun;
This is the way of life,
Till the work be done.

All that we need to do,
Be we low or high,
Is to see that we grow
Nearer the sky.

Autumn Appetisers

ONE of the pleasant things about autumn is the abundance of garden produce. With such a varied and plentiful supply of ingredients to choose from, the housewife has ample scope for trying out new food combinations which give a fillip to autumn meals. For instance, instead of regarding cucumber as a decoration for salads or a sandwich filling, why not cook it and have it hot with a steak dinner? Rhubarb, cut into short lengths, sprinkled with salt and steamed till soft, also makes a good accompaniment to meat and potatoes. Instead of serving vegetables in the usual way, offer your family a vegetable roll for a change (other vegetables may be included besides those mentioned below—make the most of whatever is available). If you find marrow insipid, then curry it or add a savoury stuffing; cauliflower has twice the appeal when it is baked in a casserole with cheese sauce and breadcrumbs.

And have you ever made a chocolate potato cake, or a passion fruit tart, or put tomato pulp in a cake? Here are the recipes for you to try:—

CHOCOLATE POTATO CAKE.

¼lb flour, 3oz mashed potato, ¼lb sugar, 3oz. butter, ¾ cup milk, 2 tablespoons cocoa, ½ teaspoon baking soda, 1 teaspoon baking powder, vanilla essence, ½ teaspoon salt.

Cream the butter and sugar. Sieve the potato, add the sifted flour, salt, baking powder, and soda, and work in the butter and sugar till the mixture resembles breadcrumbs. Mix the cocoa and vanilla to a smooth paste with the milk and stir it well into the mixture. Bake in greased sandwich tins for ¾ hour in a moderate oven. When cool put together with a chocolate or mock cream filling and ice with chocolate icing.

PASSION FRUIT TART.

2 eggs, ½ cup sugar, pulp of 3 passions, 1 teaspoon butter, 1 teaspoon lemon juice, short crust pastry.

Line tart plate with thinly-rolled short crust. Whisk eggs, add sugar, lemon juice, and passion pulp, and pour mixture into pastry cases. Dot with butter, and bake 25 to 30 minutes in moderate oven. Serve hot or cold with custard or cream.

TOMATO CAKE.

2 cups flour, ½ cup beef dripping, 1 cup sugar, 1 level teaspoon bicarb. soda, 1 cup tomato pulp or soup, 1 teaspoon ground cloves, 1 teaspoon cinnamon, ½ teaspoon salt, 1 cup raisins, milk to mix.

Cream dripping and sugar. Mix soda with tomato pulp or soup, and add alternately to creamed dripping with the sifted flour, spices and salt. Stir in raising and enough milk to moisten, put into greased papered cake tin and bake two hours in slow oven.

CHEESE AND MINT SCONES.

3 cups flour, ½ cup grated cheese, 1 tablespoon finely-chopped mint, ½ cup raisins, 3 tablespoons butter (or 1½ tablespoons butter and 1½ tablespoons lard or dripping), 3 teaspoons baking powder, milk to mix.

Rub fat into dry ingredients, add mint and cheese, then raisins and mix with milk to light dough. Roll out, cut into shapes and bake in quick oven.

LEMON CUCUMBER STEAK.

Beat well a thick round of porterhouse steak (about 2 lbs.). Put a rasher of bacon in a saucepan with a thick slice of lemon, on it place the steak, then another slice of lemon and bacon, and cover closely. Cook slowly for ½ hour, add ½ cup water or stock and continue cooking till steak is tender. Peel and cut a cucumber into thick slices, and add to the steak, also more stock or water if cucumber is not covered by gravy. Simmer till cucumber is tender, turn on to a hot dish, and garnish with fried tomatoes.

VEGETABLE ROLL.

Pastry: 8 oz. flour, 3 oz. butter (or beef dripping), pinch of salt, 1 teaspoon baking powder.

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Filling: Minced potatoes, carrots, onions, peas and beans.

Rub the butter into the sifted flour, add the salt and baking powder, and mix to a stiff dough with a little water. Roll out on a floured board and fill with minced vegetables, seasoned to taste. Roll up and place in a meat-dish. Dot a little butter over the top and baste with a mixture of 1 teaspoon of gravy powder blended with a cup of boiling water. The roll should be cooked for ¾ hour and basted with the gravy at intervals.

CURRIED MARROW.

One onion, marrow, 1 teaspoon curry powder, 1 dessertspoon flour, 1 tablespoon dripping, salt.

Prepare the marrow and cut into cubes, then add the sliced onion and the dripping. Heat through thoroughly and then stir in the flour, curry powder, and salt, which have been mixed to a smooth paste with a little water. Simmer till the marrow is tender.

STUFFED MARROW.

Marrow, seasoning, herbs, breadcrumbs, sausage or minced meat, dripping.

Leave the marrow unpeeled and if it is not too big a one, split it lengthwise, or else slice it into rings. Remove the seeds and stuff it with a forcemeat made of onion, sausage meat (or minced meat), herbs such as thyme and parsley, salt, and pepper. Then tie the top on and place in a baking dish with sufficient dripping and cook for about an hour, basting frequently. If you have some bacon, a few rashers placed over the top of the marrow 10 minutes or so before it is due to come from the oven will add a delicious flavour to the vegetable. (Cheese may be used as a substitute for the meat in the stuffing if desired.)

CAULIFLOWER CASSEROLE.

One large cauliflower, 1 cup grated cheese, breadcrumbs, 1½ cups milk, 1 onion, 1 tablespoon flour, salt and pepper, 1 tablespoon dripping, tomato. Steam the cauliflower and break into sprigs. Make a sauce of the flour, salt and pepper. and milk, and cook the chopped onion in the dripping, adding it to the sauce. Put alternate layers of the cauliflower, grated cheese, breadcrumbs, and sauce into a casserole, finishing with the breadcrumbs. Bake in a moderate oven for ½ hour.

APPLE ROSES.

Wipe, clean and core six red apples, and fill the cavities with chopped nuts and raisins, flavouring with a little vanilla. Cut skin in eighths about an inch down, and turn each point down as fruit steams slowly. Serve as a sweet.

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FLUMMERY.

2 cups water, 1 packet limefruit jelly crystals, 1 dessertspoon custard powder (lemon preferred), 2 tablespoons sugar, 4 passion fruit, juice of 1 orange and 1 lemon.

Put one cup of water into a saucepan (not iron) with jelly crystals and sugar, stir well, boil 1 minute. Mix custard powder in a bowl with part of a cup of water, to a thin smooth cream. Put remaining water in saucepan with jelly mixture. Stir in custard powder and boil for 2 or 3 minutes. Put in large bowl and leave till cold but not set. Beat stiff, pour in fruit juice and stir well. Pile into a glass dish.

CURRIED EGGS.

4 hard boiled eggs, teaspoon curry powder, 1½ oz. butter, salt to taste, 1 small onion, chopped finely, ¾ cup milk, 1 tablespoon flour.

Put the butter in a saucepan, and slightly fry the chopped onion in hot butter. Sprinkle in the flour and curry powder, cook a minute or two, then stir in the warm milk, season with salt, and cook till it thickens. Shell the eggs, cut in halves, put into the curry sauce, and heat again before serving.

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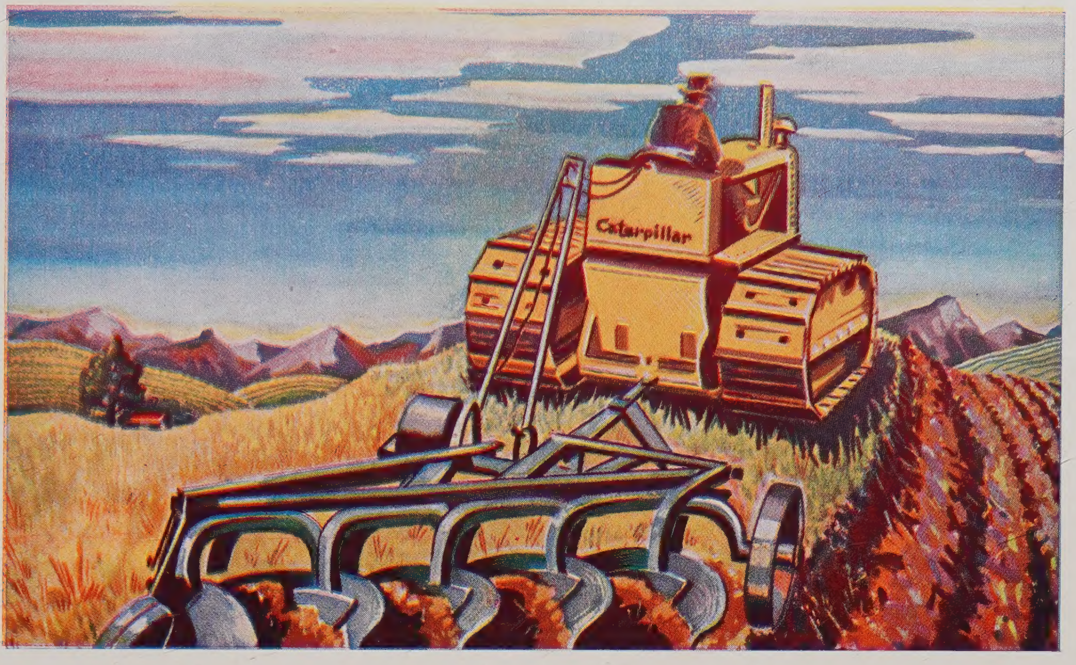

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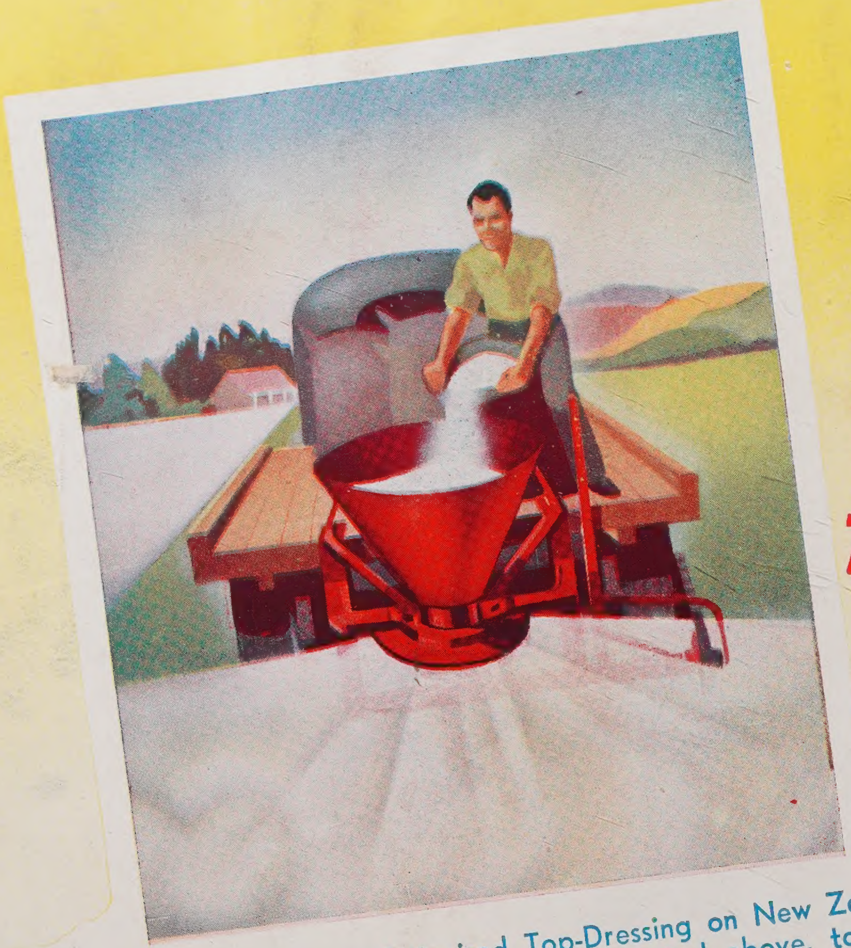

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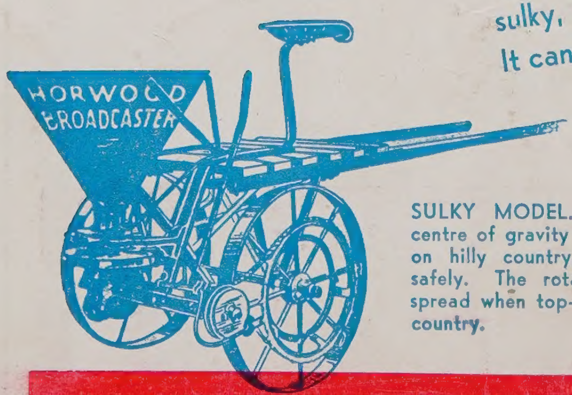

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